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GEORGE
STUBBS
—
THE
ANATOMY
OF THE
HORSE

THE
A N A T O M Y
OF THE
H O R S E.

INCLUDING A PARTICULAR DESCRIPTION OF THE
BONES, CARTILAGES, MUSCLES, FASCIAS, LIGAMENTS, NERVES,
ARTERIES, VEINS, AND GLANDS.

ILLUSTRATED BY TWENTY-FOUR PLATES.

BY GEORGE STUBBS,
PAINTER.

INTRODUCTION

BY
CONSTANCE-ANNE
PARKER

It seems as though Stubbs always had to have a project on hand. Some subject that was quite outside, though related to, the work that he was doing as a successful painter. A project to work at, to inquire into and to experiment with. He seemed compelled to have a scientific investigation as an occupation for the restless energy of his mind. As a child he was absorbed by the mystery of unknown natural forms, and as a youth he explored the world of living structure.

By 1745, at the age of 21 and living in York, where he was earning a living as a portrait painter, Stubbs was already giving lectures on anatomy to pupils at the local infirmary. One of his contacts prevailed on him to illustrate a new book on midwifery in 1751, and for this it seems Stubbs taught himself the rudiments of etching and engraving. He was not satisfied by following the methods taught him, but immediately experimented to improve all the technical processes. A brief visit to Rome only encouraged him to turn to nature, rather than to art, for his inspiration; and some time in 1756 or 1757 he started to make his preparations for a really tremendous project, that of producing a book on the anatomy of the horse.

This was to take him the better part of ten years to finish, and was the result of many more years of study and observation. It was 'upon the advice of his young Chirurgical friends with whom he had been previously connected at York' that he decided to 'complete and publish *The Anatomy of the Horse*'. This last quotation from Humphry gives the impression that the project had been in Stubbs' mind for a number of years, and that he had done a good deal of preliminary work on the subject with the book in mind. In the preface to the book, he says that he consulted most of the treatises upon the subject, and when the book was advertised it said that it was the result of many years of actual dissection. Of the treatises upon the horse, the most important, anatomically speaking, was Carlo Ruini's *Dell' Anatomia et dell' Infirmity del Cavallo*. This was published as early as 1598 and little that was published subsequently improved upon it, either illustratively or

scientifically. Petrus Camper, the distinguished anatomist, wrote of the illustrations: 'They convey a general idea of the anatomy of the parts; but they cannot serve the painter. What then is to be expected from the works of Sannier and Snape, and others which are merely bad copies from the imperfect engravings of Ruini!' There was not much inspiration to be gained from these later works. Stubbs's own creative observation produced a completely fresh approach to the subject. The horse appears to be a living animal instead of a dead and stylized figure.

To complete the final studies for this immense work Stubbs needed a period of peace and quiet, far away in the depth of the country, where he could dissect without offending anyone. He went to Lincolnshire, to the small village of Horkstow, about six miles from Barton, where he had stayed when he was working for the Nelthorpes. There he 'engaged a farmhouse that he might without inconvenience to others have dead horses, and subjects adapted to his purpose'.

The exact location of this farmhouse is not certain, but presumably it would have been some distance from the village and isolated from neighbours. The 'inconvenience' would have been considerable had other farms been within receiving distance of the nauseating and penetrating smell of decaying horseflesh. Landseer said of the lion which the Zoo had provided for him to use as a model for his bronze lions in Trafalgar Square, and which had died whilst he was out of town: 'Anything as fearful as the gases from the royal remains it is difficult to conceive . . . We shut our eyes to nasty inconvenience and open them to the importance of the opportunity of handling the dangerous subject whilst in a state of safety.'

Stubbs must often have 'shut his eyes to nasty inconvenience' during the next year and a half. He tackled the whole project by himself, with no outside help, and with no other companion or assistant than Mary Spencer, his common-law wife. It must have been rather hard on her, for unlike him she had not been brought up in the house of a tanner, and her nose was probably less accustomed to unpleasant odours.

The medical students and surgeons from York failed to come to Stubbs's assistance with either money or practical help, as they had originally promised. So, single-handed, he began what to most men would be a life-work, and one requiring a good deal of careful organization. There were three main operations to be conducted. First, after the awkward and heavy job of rigging up the dead horse in the dissecting-room-studio, there was the dirty work of stripping and cleaning, and the injection of the animal's veins, preparatory to beginning the dissection proper. Second, having dissected and laid bare the part to be illustrated, there was the completely different task of making working drawings, which was clean, precise work, far away from the butcher's shop atmosphere of bleeding the horse to death, and then skinning and disembowelling it. Finally, there was the writing up of the descriptions for the book's text.

Humphry gives this detailed account of the way Stubbs attacked the project:

As these studies and operations were singular and very important, the manner in which they were conducted may not be uninteresting to relate. The first subject which was prepared was a horse which was bled to death by the jugular vein, — after which the arteries and veins were injected. Then a bar of iron was suspended from the ceiling of the room, by a Teagle of Iron to which Iron Hooks were fixed. — Under this bar a plank was swung about eighteen inches wide, for the Horse's feet to rest upon, and the Horse was suspended to the Bar of Iron by the above mentioned Hooks which were fastened into the opposite side of the Horse to that which was intended to be designed; by passing the Hooks through the ribs and fastening them under the Backbone and by these means the Horse was fixed in the attitude which these prints represent and continued hanging in this posture six or seven weeks, or as long as they were fit for use.

His drawings of a skeleton were previously made — and then the operations upon this fix'd subject were thus begun. He first began by dissecting and designing the muscles of the abdomen — proceeding through five different layers of muscles till he came to the peritoneum and the pleura through which appeared the lungs and the Intestines — after which the Bowels were taken out and Cast away — Then he proceeded to dissect the Head, by first stripping off the Skin and after having cleaned and prepared the muscles &c. for the drawing, he made careful designs of

them and with the explanation which usually employed him a whole day. Then he took off another layer of Muscles, which he prepared, designed and described, in the same manner as in the Book — and so he proceeded till he came to the Skeleton — It must be noted that by means of the Injections the muscles, the Blood-vessels and the Nerves retained their form to the last without undergoing any change of position — In this manner he advanced his work by stripping off the skin and cleaning and preparing as much of the subject as he concluded would employ a whole day to prepare design and describe, as above related till the whole subject was completed.

The drawings for *The Anatomy of the Horse*, or at any rate, some of the drawings made at Horkstow, can be seen and studied in the Royal Academy Library. If looked at very closely, it is possible to see beneath the drawing of the muscles a faint trace of the skeleton, drawn in pale ink. Also the outline or silhouette of the horse was generally laid in, in the same manner. Stubbs prepared a master drawing of the silhouette of the horse in the required pose, and the skeleton in the same position. These would have been traced on to a number of sheets of paper, the master drawing having been pricked all along the outline with tiny holes and placed over a blank sheet of paper, after which powdered charcoal or chalk would have been tapped, or pounced, through the holes on to the blank sheet, leaving a series of faintly dusted-in dots. These little dots were then carefully joined up to reform the exact outline of the master drawing. It is fairly easy to see these joined dots on one or two of the drawings, as it gives a slightly jerky look to the line. He also squared up some of the drawings and reproduced them by this method. These tracings were executed in pale ink leaving a permanent, but unobtrusive drawing, as a basis on which to place the muscular layers as the dissections progressed deeper and deeper — thus giving a continuity of size and pose over a number of different horses; Stubbs said that he 'dissected a great number of horses'.

One must bear in mind that many of these drawings were working studies through which Stubbs was gaining the knowledge and information needed to produce the final set of finished drawings from which the plates were to be engraved. Quite a number of these drawings are almost notes, rather than finished studies; they are rapidly and roughly scribbled in, in black chalk, and bear little visual resemblance to the plates. It is interesting to note that while the side-view studies

are all in the same pose, though varying somewhat in size and proportion – there are two sets that correspond to two different master drawings – the front and back views have two poses each, with the horse in movement, in an almost trotting action. One pose which corresponds more or less exactly with the pose in the engravings, and a second set, in which the perspective is particularly steep and gives a curious impression of a very long hind leg in the back view, and of a badly taken photograph in the front view, with an exaggeratedly large head. This is more likely to have been caused by working in a restricted space without room to get away from such a very large subject, and not by inaccurate drawing or observation. Presumably these were the earlier drawings in the series, as they are also less highly finished and more roughly executed. These rapid notes tend to be considerably larger in scale than the careful studies.

Stubbs used quite a wide variety of media in the drawings. In the delicate and beautifully precise work which was to be used for the engravings, he uses pencil. These are meticulous in detail and wonderfully controlled. They have an expressiveness combined with an absolute authority which lifts them far above the normal study, and makes them a visual delight. Their clarity is amazing and the way he constructs a leg-bone, muscle, tendon, and vein are expressed so clearly and concisely, with subtle differentiation of texture, and all within so tiny an area. In some of the larger drawings he has used black chalk, and the smaller details are noted in sanguine.

The layout of the book, in eighteen 'plates' or 'tables', shows first the front, side, and back views of the skeleton, followed by five plates of the muscular layers progressing from the subcutaneous, deeper and deeper towards the skeleton. The fully modelled engravings are paired with the line engravings, or diagrams, of the same view and anatomical layer, lettered and numbered, to form a key to the text, and to clarify the position of the veins and nerves. This preserves the unity of the engravings, which are unspoilt by any type of key spotted over their surface. Camper points out the similarity in arrangement to Albinus's famous *Tabulae Sceleti et Musculorum Corporis Humani* illustrated by Jan Wandelaar. Stubbs would have undoubtedly studied this book, published some ten years before, in 1747.

To return to the drawings, there are studies for the diagrams as well as for the engravings. These are mostly drawn in a golden yellow ink and with the horse's outline in sanguine chalk. The arteries or nerves are put in in pencil and the letters and figures in brown

ink. However, he uses a number of variations of this arrangement. One of the drawings of the skeletons is boldly drawn in dense black ink, and there is a set of three very fine measured drawings in sepia ink. Each bone is related by measurement to the whole, and by related angles and fixed points, the position and proportion is worked out. At the top of the side-view drawing, in Stubbs's own writing, it is possible to make out the words 'Proportions taken from an old mare about 13 hands high'.

Camper, in his book, says: 'You will naturally suppose that the skeleton of the horse which is the most beautiful and useful of animals, must have been delineated with peculiar care and exactness. But alas, exclusive of those painted by the great master in this department, Stubbs, and engraved after his paintings, I know not of any that deserve commendation . . .'

He also said, of *The Anatomy of the Horse*: 'that of Stubbs is masterly and accurate; all the parts are properly placed, are in just proportions, and are well delineated. In his finished pieces the muscles are represented with an accuracy that cannot be exceeded. In a word, his skeleton of the horse, and his arrangement of the muscles, exhibit such a masterpiece, that the author deserves the highest honours that were ever bestowed upon an artist.'

It seems probable from the following extracts by 'Janinus' in 'Conversations on the Arts' in *Ackerman's Repository* that Stubbs had articulated a skeleton so that it could only be moved into poses that a live horse could take, and that it could only make the same actions as a real horse. 'I refer to a skeleton which I have, invented by Mr Stubbs, the horse painter. It is so prepared that in whatever attitude it is put, it continues in that position. By this contrivance a painter can always have before him the osteology exactly in the position of the figure which he is painting.' And also: 'I will place this skeleton upright. It has in it a great number of copper and annealed wires. It is never prepared in this way by the common mounters of skeletons. This not only retains the position it is placed in, but it cannot be put in an unnatural position.'

The drawings were completed at the end of about eighteen months of hard labour – and it must have been very hard and dirty work for Stubbs to cope with, and with Mary Spencer as his only help and assistant. Luckily for him, he was young, tough, and extremely strong – not only physically but mentally and morally, with an immense will-power and determination. It became a kind of legend that he could carry a dead horse up the stairs to his dissecting room without help. The strain of rigging up the dead weight of a carcass

to draw from would have taxed most men's strength, and he did this to a 'great number of horses' – not just one. He was subject to considerable dangers from infection from the putrefying remains. Without antiseptics, many anatomists died. Jesse Foot recalled five lecturers who died of a 'putrid myasma'. Stubbs was said to have worked on one horse for eleven weeks. The state and the smell of it must have been indescribably horrible, yet the drawings have a calm, unemotional quality, completely unaffected by any of the drama of the situation.

Stubbs's command of the technical side of dissection was surprising. A great deal of highly specialized knowledge was required to prepare the horse for dissecting; the arteries and veins had to be injected with wax and other substances to keep their shape and position, so that they could be recorded. He had to be able to dissect extremely quickly, for without any form of preservatives, decomposition would set in very rapidly, particularly in small, stuffy and poorly ventilated surroundings such as a farmhouse. No other anatomy of the horse was anything like as advanced scientifically or as accurate. Even now, two hundred years later, it remains a monumental work that would be hard to fault.

Stubbs left Horkstow sometime in the summer of 1759, and probably returned to Liverpool for a short while, for the register of St Peter's Church records that Mary, daughter of George Stubbs, limner, was buried there on 18th September. He proceeded to London in the autumn, with the drawings complete and ready for the engravers to make a start on the plates. However, this was not as easy to arrange as he had hoped. He approached 'Mr Grinion and Mr Pond' and made inquiries to many other engravers of professional standing, but when his drawings were shown to them, they all declined to undertake the commission, even Mr Grinion, who had engraved some of the plates for Albinus's *Anatomy*. The reason given being that though many of the drawings were of entire horses, others were of parts only, such as ears, noses, and limbs. The engravers had not worked on such a project before and didn't understand it at all. They laughed at the studies and were unwilling to have anything to do with the book in case they should be ridiculed, and, anyway, the subject was not one which appealed, having a slightly disreputable flavour. It is interesting to speculate on what happened to the drawings of 'ears, nose, and limbs', as there are none in the collection in the Royal Academy Library. In fact, Stubbs presumably did a great number of drawings and studies at Horkstow, of which perhaps only a fraction remain.

Some may yet turn up, but at the present time there are forty-two at the Royal Academy and one at the British Museum, plus a couple of others in private collections. It was as late as 1963 that the number of known drawings for *The Anatomy of the Horse* at the Royal Academy changed from eighteen to forty-two. The eighteen were well known and loved by many R.A. students and lovers of horses, as well as by scholars of Stubbs. They had been housed in the R.A. Library in a solander case for many years.

They were left to Mary Spencer, with many other works, in 1806, when Stubbs died. She kept them till her death in 1817, when they were bought by Colnaghi. At the time when Joseph Mayer was collecting material for his essay on Stubbs he wrote to the animal painter, Abraham Cooper, R.A., and received the following reply: ' . . . Perhaps you are aware that my friend Edwin Landseer R.A. possesses Stubbs's original drawings for *The Anatomy of the Horse*. Old Colnaghi bought them at a sale some years back when a sale of Stubbs's things took place and Landseer painted him – Colnaghi – a picture for them.' Landseer thought a lot of them, and though he had offers to sell the drawings, he never parted with them. They were left by him in 1873 to his brother Charles, who was Keeper of the Royal Academy Schools for over twenty years. When Charles Landseer died, six years later, he bequeathed to the Royal Academy a large sum of money – over £10,000 – to found scholarships and prizes for art students, and the Stubbs Drawings. The bequest of the drawings is not mentioned in the Royal Academy's Annual Report for 1879, though the money is recorded. However, in the Report of the Inspectors of Property of the following year, it is stated: 'That the anatomical drawings of the Horse by George Stubbs A.R.A. be removed from their present position on the staircase leading to the Diploma Galleries, and placed with his other works in the Library for the more convenient reference of the students.' These 'other works' must refer to the two books by Stubbs, *The Comparative Anatomy* and *The Anatomy of the Horse*, which were already in the Library.

For many years the eighteen drawings were thought to be the entire collection, but in 1963 the Royal Academy put on an exhibition of 'Treasures of the Royal Academy'. It was while searching for interesting relics that a rather battered portfolio came to light, and while going through some distinctly uninteresting architectural drawings a grubby paper parcel emerged from the bottom. Inside were twenty-four more drawings. It seems likely that at the time when they were bequeathed the most suitable were mounted and

framed, and hung on the Diploma Gallery staircase. These were the more highly finished and delicate of the forty-two. Also they were the ones most directly related to the plates. The few of the same type that were in the parcel of unmounted studies were all quite large and would hardly have hung conveniently with the others. The eighteen would also have been considered the most useful and helpful for the R.A. students to study from. There is no mention in the Academy's records as to the number of drawings originally in the Landseer Bequest.

Of the eighteen engravings and eighteen diagrammatic line engravings in the book, twenty of them have drawings in the collection that directly relate to the plates. Of these, fifteen are from the old set of eighteen, and five belong to the newly discovered twenty-four. All the five relate to the diagrams and the others are drawings from which most of the plates were actually engraved.

Because no engraver would take on the job of translating the drawings into engravings – and not just into artistic renderings, but super-accurate illustrations to a scientific work – Stubbs was obliged to undertake the work himself. It is obvious from the finished plates that he set himself an exceedingly high standard of execution. There is a tremendous advance on the midwifery plates, both technically and aesthetically. In the ten years since then he had developed and matured, and the period of tremendous study at Horkstow was a very great influence on his powers of observation and analysis of form. His draughtsmanship was by this time masterly and sensitive. The preparation and engraving of the thirty-six plates, and the finishing of the text, took Stubbs six years, for he never used daylight hours for anything but painting, so the plates were worked on during the evenings and in the early mornings.

Stubbs considered that the best way to get the book published and sold was by subscription, so it was advertised in the papers, and a form or leaflet was printed, also giving the same information:

PROPOSALS for Publishing by Subscription,
THE ANATOMY OF THE HORSE INCLUDING
a particular Description of the Bones,
Cartilages, Muscles, Fascias, Ligaments, Nerves,
Arteries, Veins and Glands. Represented in
Eighteen Tables, all done from Nature. By
GEORGE STUBBS, Painter.

CONDITIONS.

The Tables engraved on Plates 19 inches by 15.

The Explanation of the Tables will be printed on a Royal Paper answerable to the Plates, each of which will be printed upon an half Sheet of Double Elephant. The Price of the Book to Subscribers will be £4. 4s. one Half to be paid at the Time of Subscribing, the other Half when the Book is delivered. The Price to Nonsubscribers will be £5. 5s. The Names of the Subscribers will be printed at the Beginning of the Work.

N.B. The Plates being all finished and the whole Work in the Press, it will be published as soon as 150 Subscribers have in their Names; which will, together with their subscriptions, be received by the following Booksellers, viz. Mr Dodsley, in Pall Mall; Mr Nourse, in the Strand; Mr Owen, at Temple Bar; Mr Newberry, in St Paul's Churchyard; and by all other Booksellers in Great Britain and Ireland. Subscriptions are likewise received by Mr Stubbs at his House in Somerset Street, opposite North Audley Street, Oxford Road.

This Work being the Result of many Years actual Dissections, in which the utmost accuracy has been observed, the Author hopes, that the more expert Anatomists will find it a useful Book as a Guide in comparative Anatomy; and all Gentlemen who keep Horses, will by it, be enabled not only to judge of the Structure of the Horse more scientifically, but also to point out the Seat of Diseases, or Blemishes, in that noble Animal, so as frequently to facilitate their Removal, by giving proper Instructions to the more illiterate Practitioners of the Veterinarian art into whose Hands they may accidentally fall.

RECEIVED the Day of.....1765
Of.....

£2. 2s. being Half the Subscription Money for
one BOOK of the Anatomy of the Horse.

Geo. Stubbs.

The date of publication was to be Saturday, 1st March 1766, and the book was printed by J. Purser for the Author. In it Stubbs refers to himself as 'George Stubbs, Painter', which he also did in the advertisements. This was extremely useful publicity for him as a painter, but it did tend to make people think of him as primarily a painter of horses. The commissions that followed the fame that the book brought him, were mainly for horses, portraits of horses, compositions of horses, and scenes where horses feature largely. These must have given him considerable satisfaction at the time, when his name was not so widely known, but

later on this limiting of his subject matter became a very sore point, as society placed the animal-painter at the very bottom of the scale and far below the 'face-painter' and history-painter. Certainly by the 1780s he was anxious to make a name for himself in this type of work.

In the event the *Anatomy* was an immediate success. It was a work of great interest to the scientifically minded and a pioneer work in its own field. The advance on its predecessors was so enormous that it aroused genuine appreciation from the greatest scientists and anatomists in Europe as well as in England. The 'Gentlemen who keep horses' mentioned in Stubbs' introduction were such a very inclusive category in the eighteenth century, when the horse was train, plane, and car to all, and both privately and commercially the prime means of transport on the roads. For this reason the book had a very wide appeal.

Ruini's work had remained the basic authority on equine anatomy for the better part of two hundred years, but the *Anatomy of the Horse* was to take over from it – and has yet to be surpassed, aesthetically, at any rate.

The engravings have a life-like, yet sculptural quality, without following the direct footsteps of Vesalius and Albinus, who show the figure in dramatic attitudes, as actors on a stage. Even to the point of trailing their dissected muscles like discarded clothes that have become too warm, as in Vesalius. The anatomized figures were set in exotic backgrounds of ruins and tropical forests containing strange beasts, such as rhinoceroses. Stubbs's simplicity of design is striking and powerful in contrast to these grandiose compositions. The design of the horse on the page is beautifully arranged and considered in relation to the available space. It has a monumental quality, and a solidity of form which is aesthetically satisfying, and has an authoritative accuracy. It also represents an enlargement of knowledge that was outstanding.

This letter from Camper makes it quite clear just how outstanding this anatomical research was:

Sir — If ever I was surprised to see a performance, I was it surely, when I saw yours on the 'Anatomy of the Horse'! The myology, neurology and angi-ology of men have not been carried to such perfection in two great ages, as these horses by you. How is it possible a single man can execute such a plan with so much accuracy and industry? You have certainly had before you the scheme of the great Albinus, but even his plates have not that delicacy and fulness, nor the expression of yours.

Give me leave to ask you, was you the engraver? for you do not mention the engraver's name. I once had a plan to offer to the public, a subscription for the like; but I am sure I could not have obtained the elegancy and exactness of yours. I dissected many horses; but I especially examined the head, and all the different sections of the inside, the bowels and so on. I made figures as large as life. I dare venture to say they are beautiful, mostly done by different means upon life itself. My intention was to reduce them to one-eighth, and to have them engraved, but after having seen and admired yours, I dropped all hopes of succeeding. This favour I hope you'll grant me, to tell me whether or not you still go on to finish this beautiful undertaking, and whether or not we may flatter ourselves to see the internal parts of this useful creature, and something about the disorders, and internal diseases of the horse.

You will be curious to be acquainted with a Dutchman who admires with so much ecstasy your Tables. I am public professor of Medicine, Anat. and Surgery at Groningen; and I have published some figures of the human arm, pelvis, etc. I am actually publishing the Brain and the Organs of Hearing, Smelling, etc. in different animals. I dissect, but I do not love horses, though I keep them for proper use and for my family. I am sure my acquaintance can be of little use to you, but yours to me of great consequence. I desire to have two copies of your performance, one for me, and one for a gentleman who admires as well as I do your book. I do not know whether your bookseller has any correspondence with us, if so he may send them to any in Holland, and they will be sent to me, and which was perhaps more easy. Direct them to Mr Fagel junr. Greffier de leurs H(autes) Puissances les États généraux, à la Haye; and our ambassador will send them to the Hague. I'll get you payed by my banker in London, Mr Andrew Grote & Co. Nothing shall be easier than to establish a correspondence with little or no expense on both sides between us.

I am, with the greatest veneration, Sir,
Your most obedient and most humble servant,

Petrus Camper, F.R.S.

Member of the R. Acad. of Surgery of
Paris, of Edinburgh, and of the Societies of
Haarlem and Rotterdam.

At Groningen, 28th July, 1771.

This letter, from such an extremely eminent man in

the field of anatomical research, must have given Stubbs a great deal of satisfaction. A year later Camper wrote to him again:

The Duke of Wolfenbottle, the Baron du Sour, and I are the only owners of your elegant performance in these provinces, though it is much wondered at by others. I am amazed to meet in the same person so great an anatomist, so accurate a painter and so excellent an engraver. It is a pity you do not like to pursue the viscera of this useful animal . . . 27th July 1772.

These letters came some time after the publication date; earlier the *Medical Review* of 1767 said of *The Anatomy of the Horse*:

This work not only reflects great honour on the author, but on the country in which it was produced. France may reap great credit from the veterinarian school lately established in that country; but what praise is not due to a private person, who, at his own expense, and with the incredible labour and application of years, began, continued, and completed the admirable work before us? But it is impossible to give our readers an adequate idea of Mr Stubbs' performance without placing the book itself before their eyes. All we can therefore add concerning it is, that the author himself dissected a great number of horses for the sake of attaining that certainty and accuracy for which his engravings will ever (if we are not greatly mistaken) be highly valued by the curious in comparative anatomy. His original drawings were all his own, and the plates were likewise engraved by his own hand. In short, we are at a loss whether most to admire the

artist as a dissector or as a painter of animals. Of his excellence in the last-mentioned capacity, few of our readers who have any pretensions to connoisseurship can be supposed ignorant; especially as some of his admirable pieces have appeared at the public exhibitions. His picture of the *Lion and Horse* and *Lion and Stag* in particular, were deservedly applauded by the best judges; nor were his *Brood Mares* less excellent, though in a very different style of painting yet we think we have seen some of his animal portraits, both of wild and tame subjects, that are, if possible, superior to those above mentioned.

The effect of this large folio of engravings on painters cannot be underestimated. It changed the outlook of British sporting art as regards horses, Sawrey Gilpin, Ben Marshall, and James Ward all owed a great debt to Stubbs. Sir Thomas Lawrence owned two copies of the book, and Gainsborough certainly had a copy, as they appear in the sales of their effects. Painters and sculptors have blessed the distilled knowledge that is so easily obtained by flipping through the pages or by making slow and serious notes and studies. Sir Alfred Munnings, who was a great admirer of Stubbs, always maintained that the finding of a copy of *The Anatomy of the Horse* was a landmark in his career. It was while he was still a student in Norwich that a second-hand book-seller managed to get hold of an original folio edition for him. It cost him 50s. and he described it as

The most unique thing of its kind ever compiled. This heroic effort, an epic of the eighteenth century, is as great and unselfish a work as anything could be.

TO THE READER.

WHEN first I resolved to apply myself to the present work, I was flattered with the idea, that it might prove particularly useful to those of my own profession; and those to whose care and skill the horse is usually entrusted, whenever medicine or surgery becomes necessary to him; I thought it might be a desirable addition to what is usually collected for the study of comparative anatomy, and by no means unacceptable to those gentlemen who delight in horses, and who either breed or keep any considerable number of them.

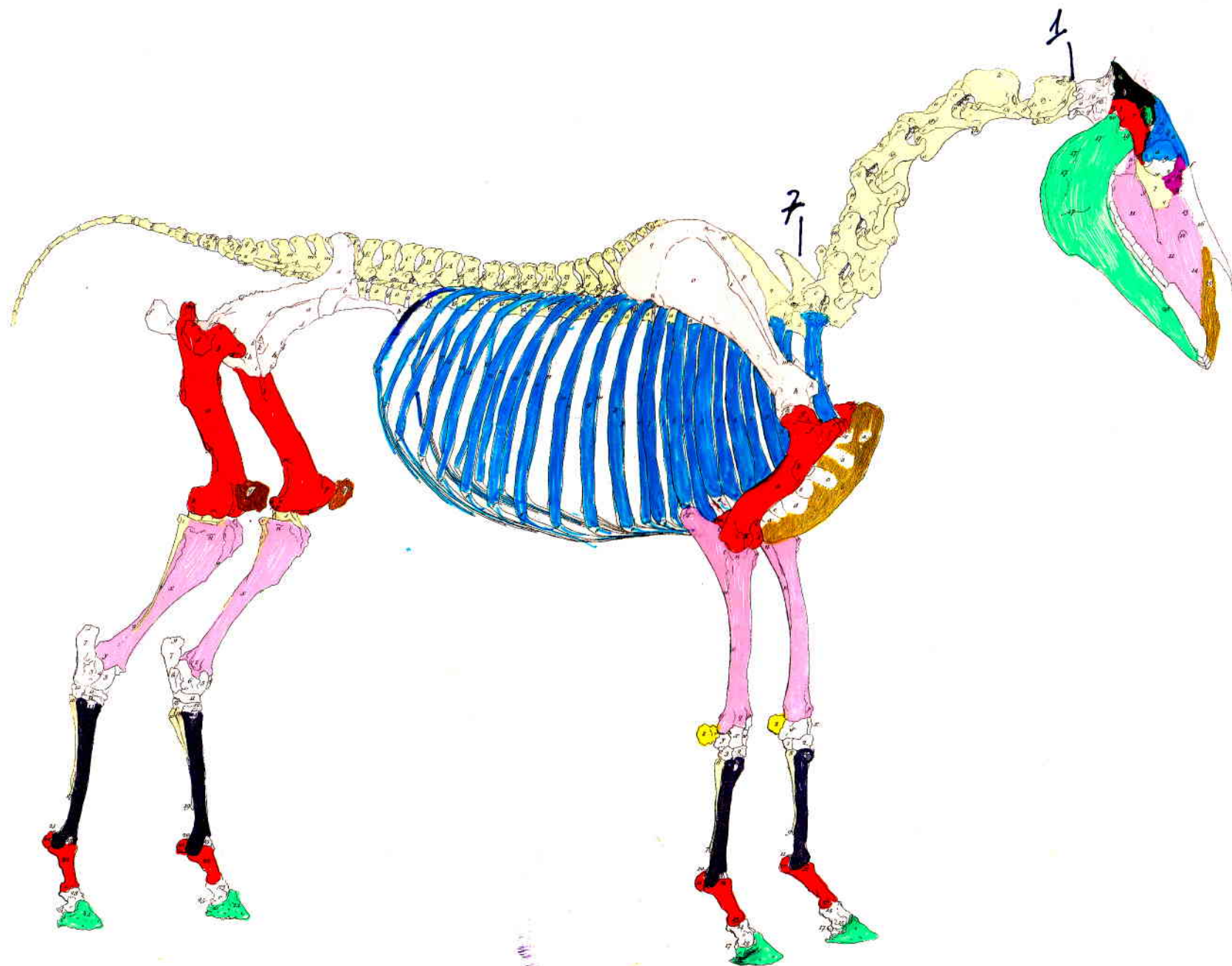
The Painter, Sculptor, and Designer know what assistance is to be gained from the books hitherto published on this subject; and as they must be supposed best able to judge, how fitly the present work is accommodated to their purpose, any address to them is superfluous.

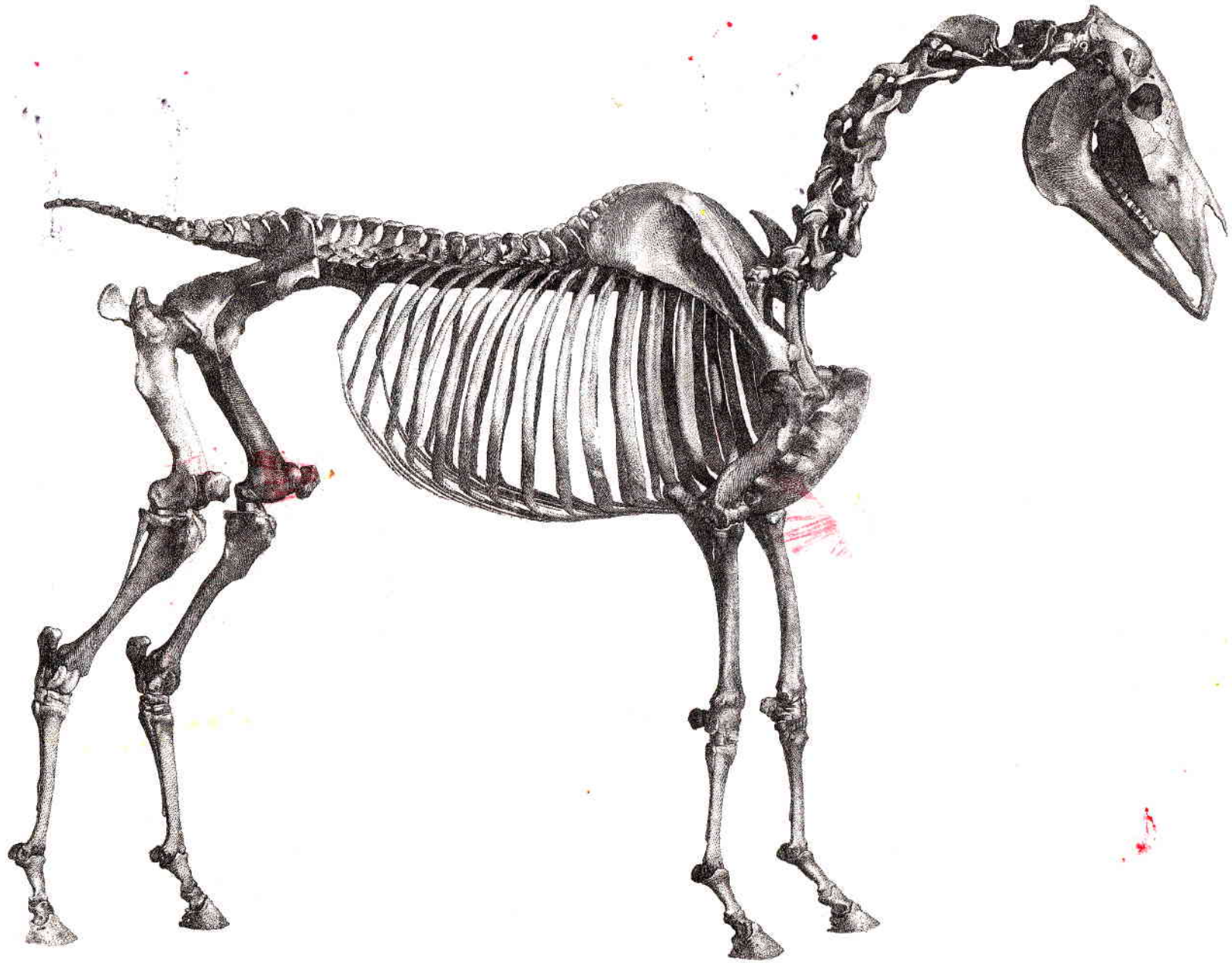
As for Farriers and Horse-Doctors, the Veterinarian School lately established in France shews of what importance their profession is held in this country; amongst us they have frequent opportunities of dissecting, and many of them have considerable skill in anatomy: but it were to be wished that this, as well as other parts of medical science, were as generally attended to by them, as by those gentlemen who treat the diseases and wounds of the human body. If what I have done may in any sort facilitate or promote so necessary a study amongst them, I shall think my labour well bestowed.

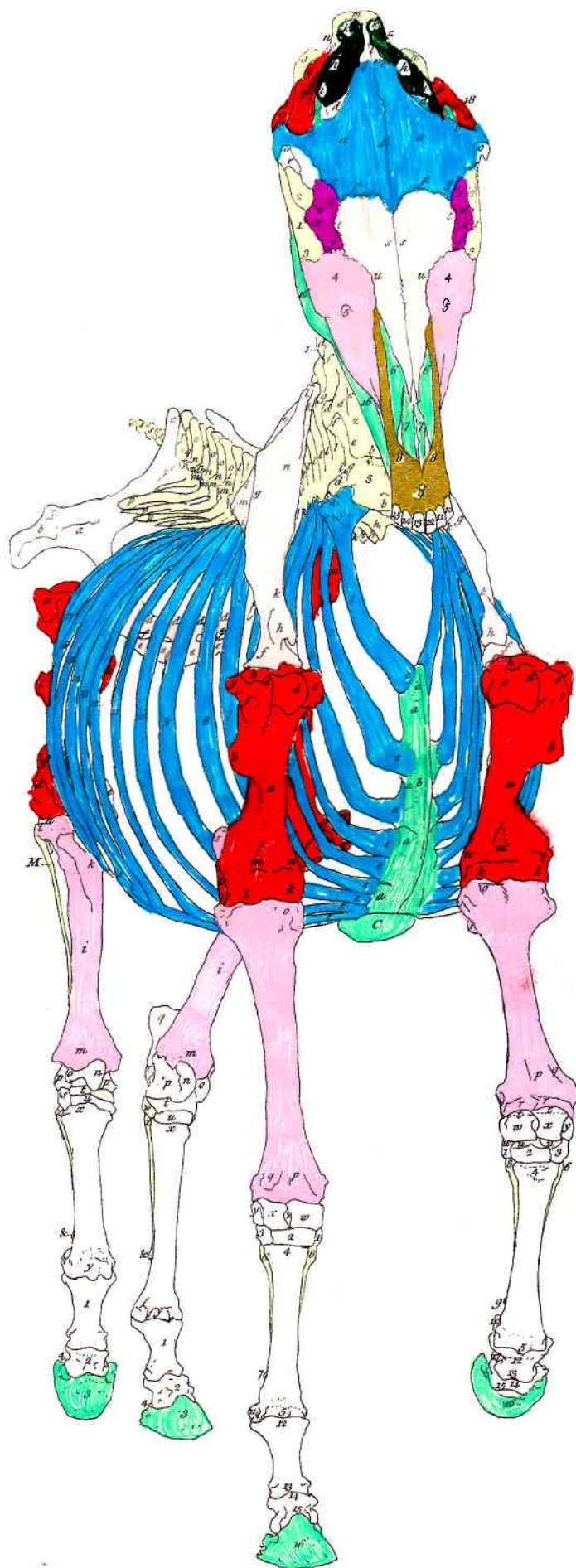
I will add, that I make no doubt, but Gentlemen who breed horses will find advantage, as well as amusement, by acquiring an accurate knowledge of the structure of this beautiful and useful animal.

But what I should principally observe to the Reader concerning this my performance, is, that all the figures in it are drawn from nature, for which purpose I dissected a great number of horses; and that, at the same time, I have consulted most of the treatises of reputation on the general subject of anatomy.

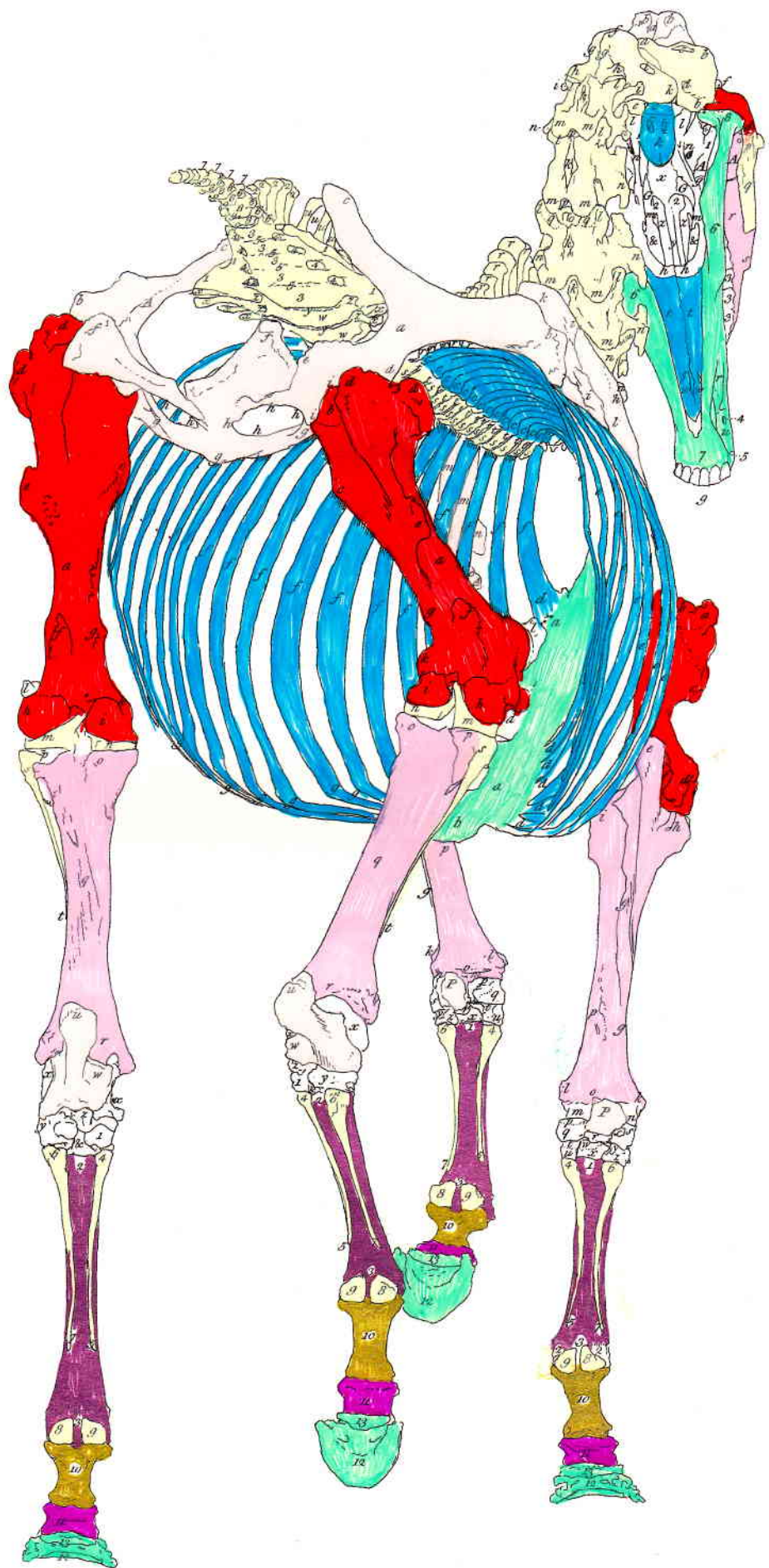
It is likewise necessary to acquaint him, that the proportions which I have mentioned in several places of the book, are estimated from the length of the head, as is usually done by those who have treated on the proportion of human figures; this length is taken from the top of the head to the ends of the cutting teeth, and is divided into four equal parts, each of which is again divided into twelve minutes.

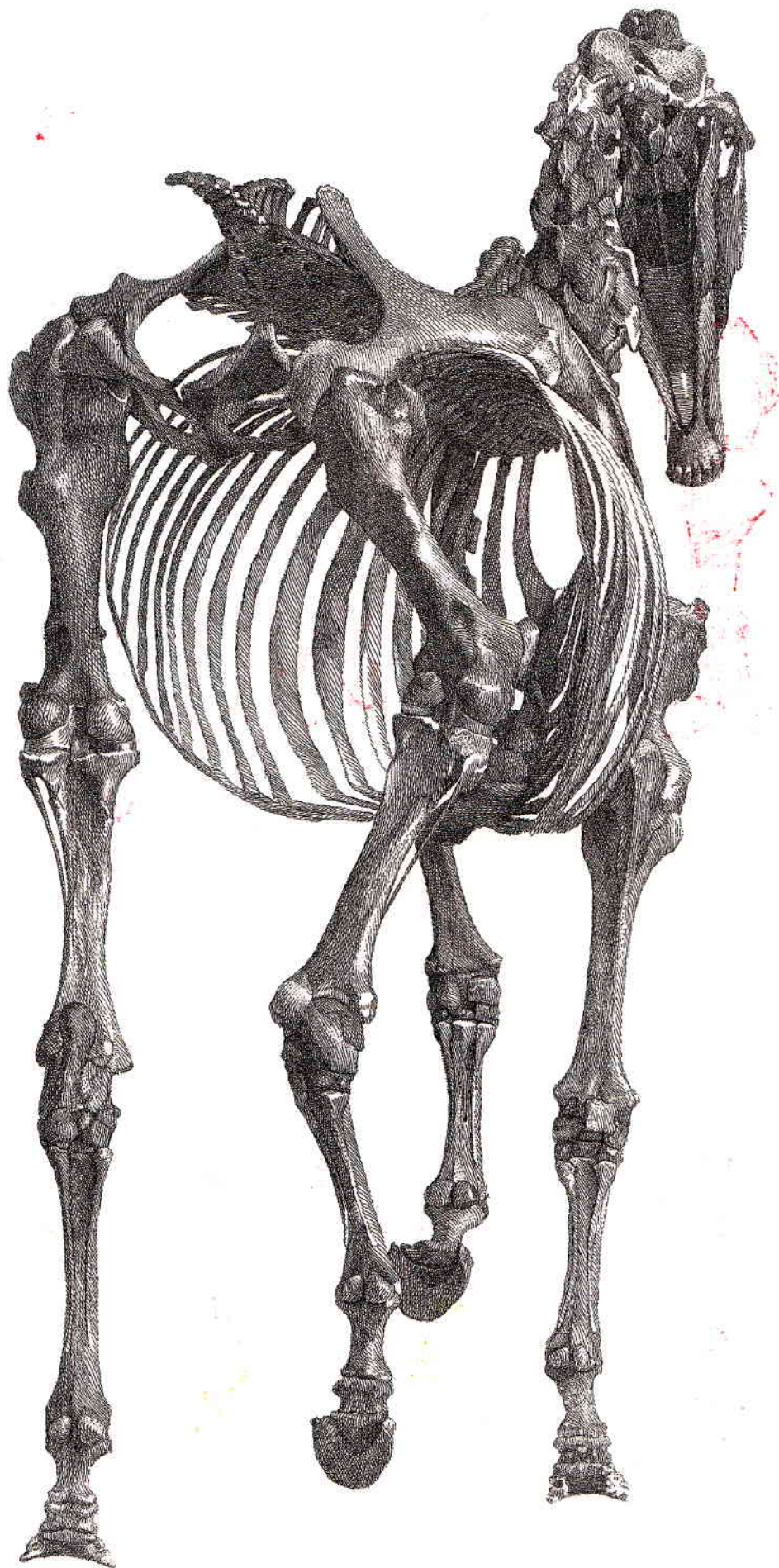


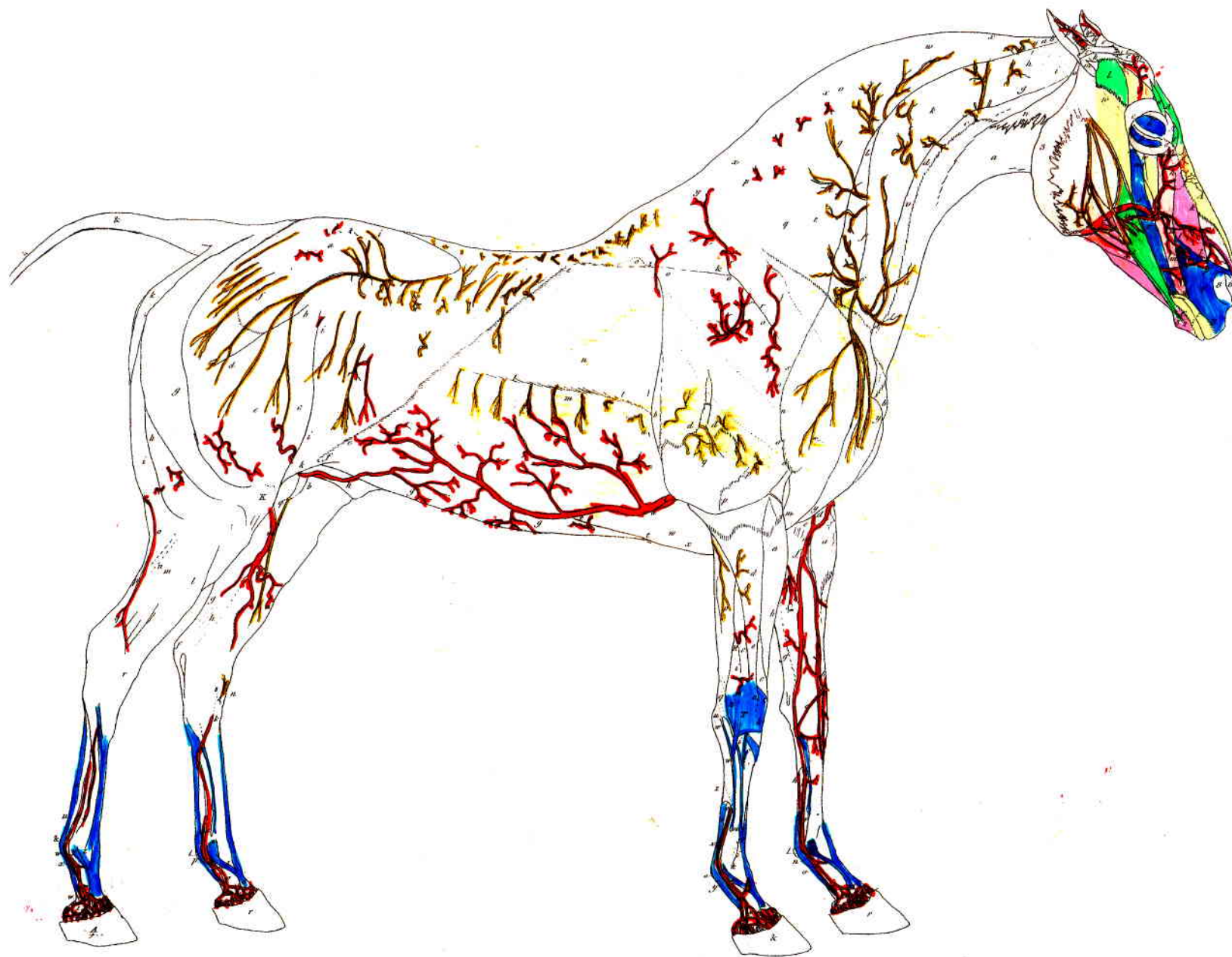


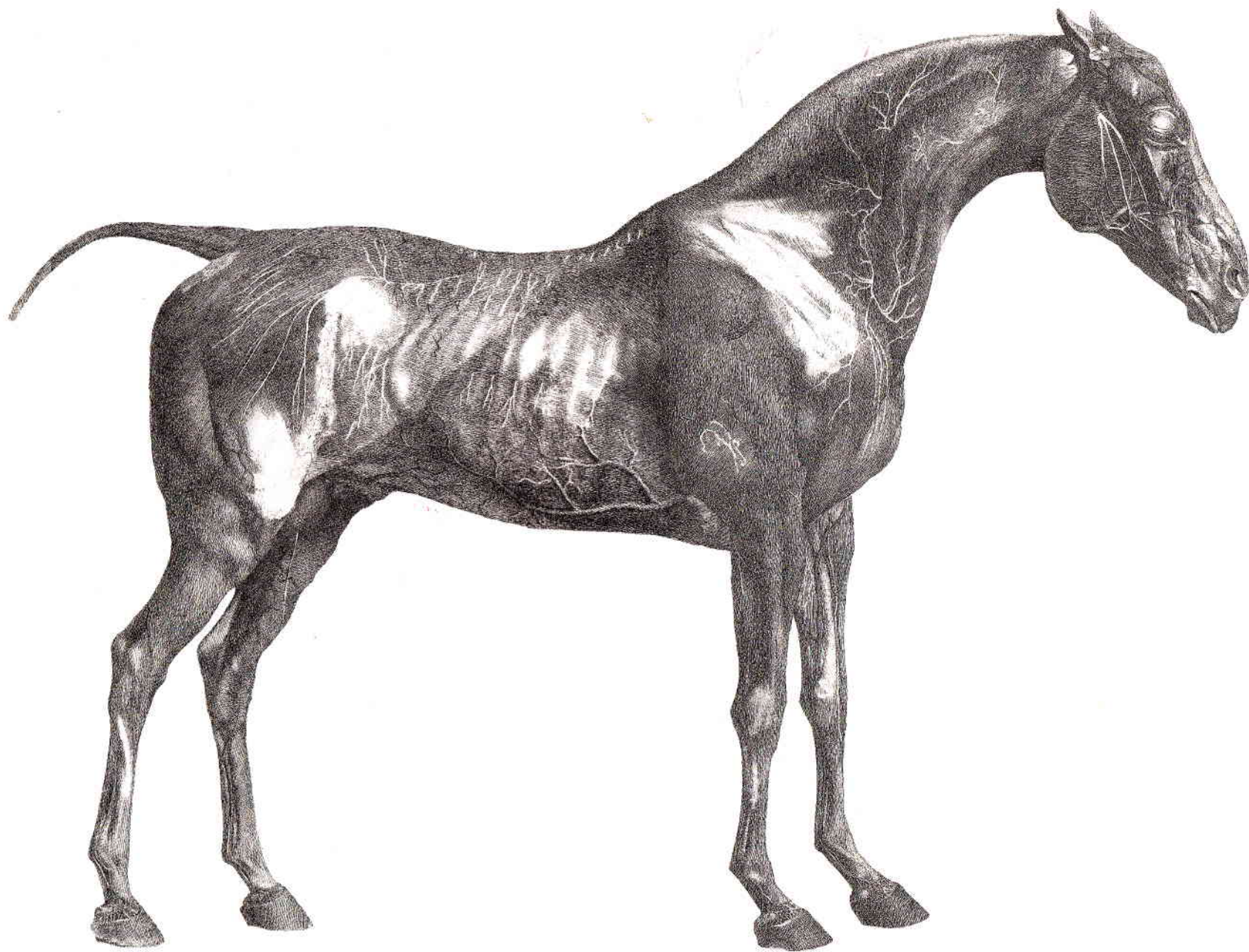


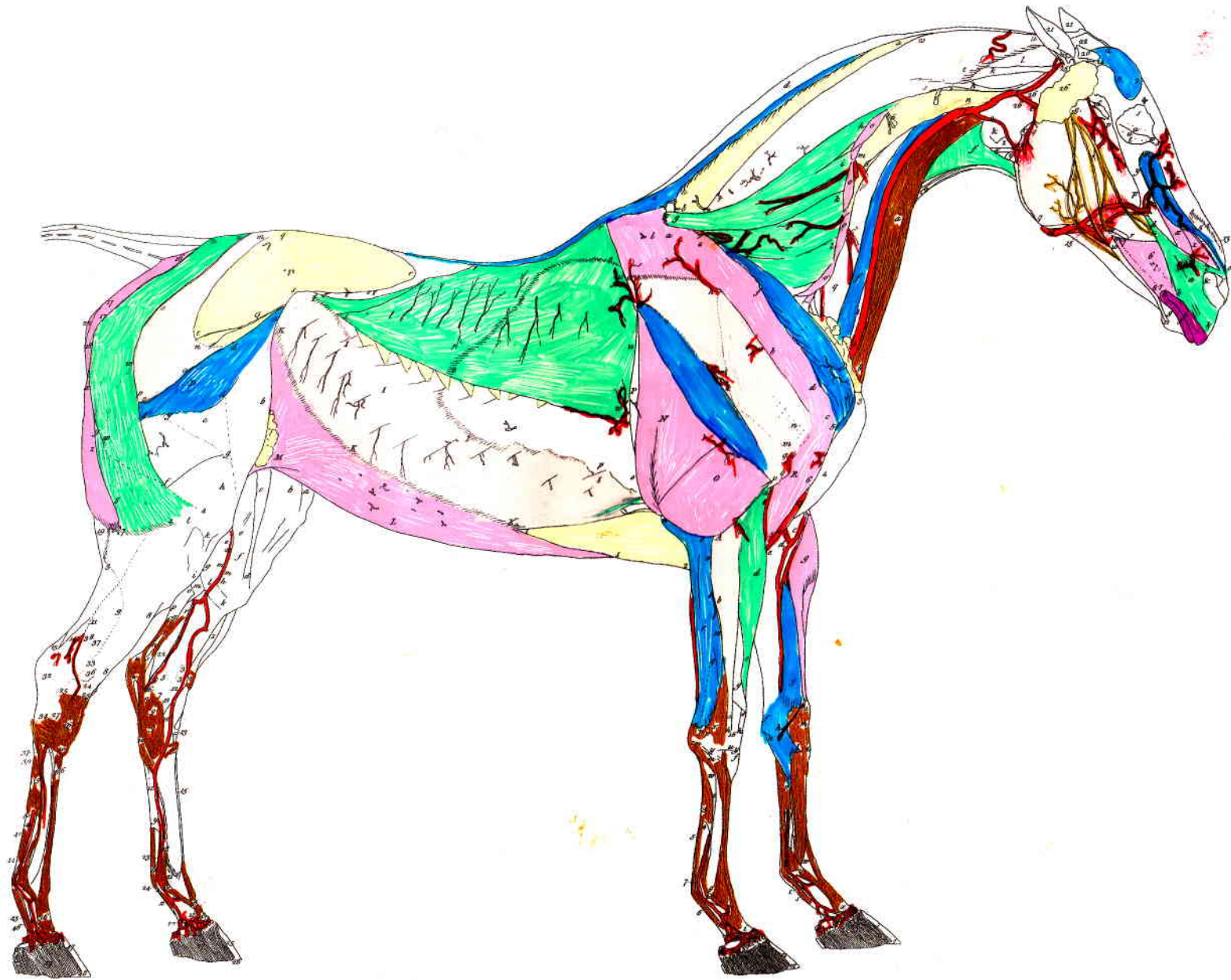


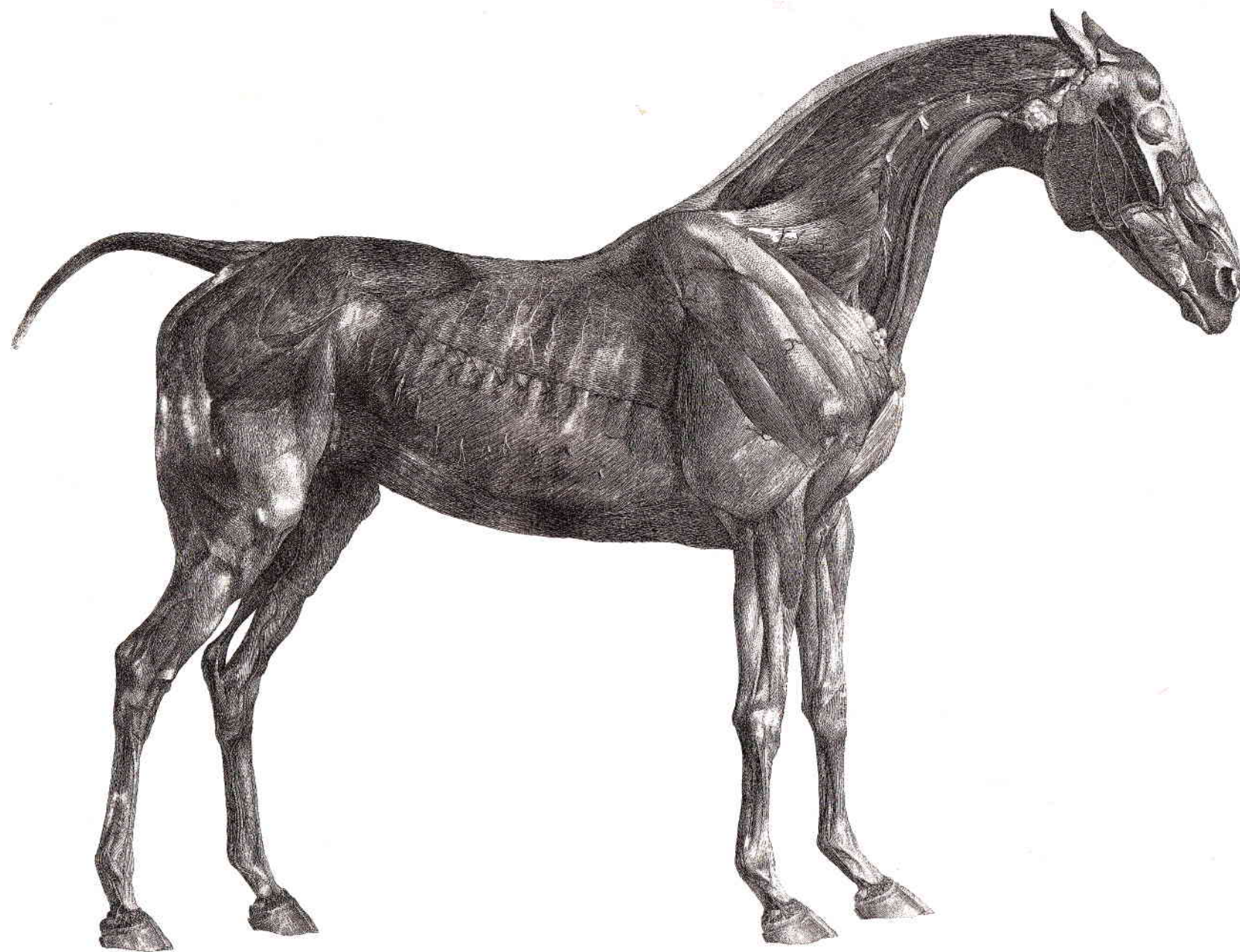


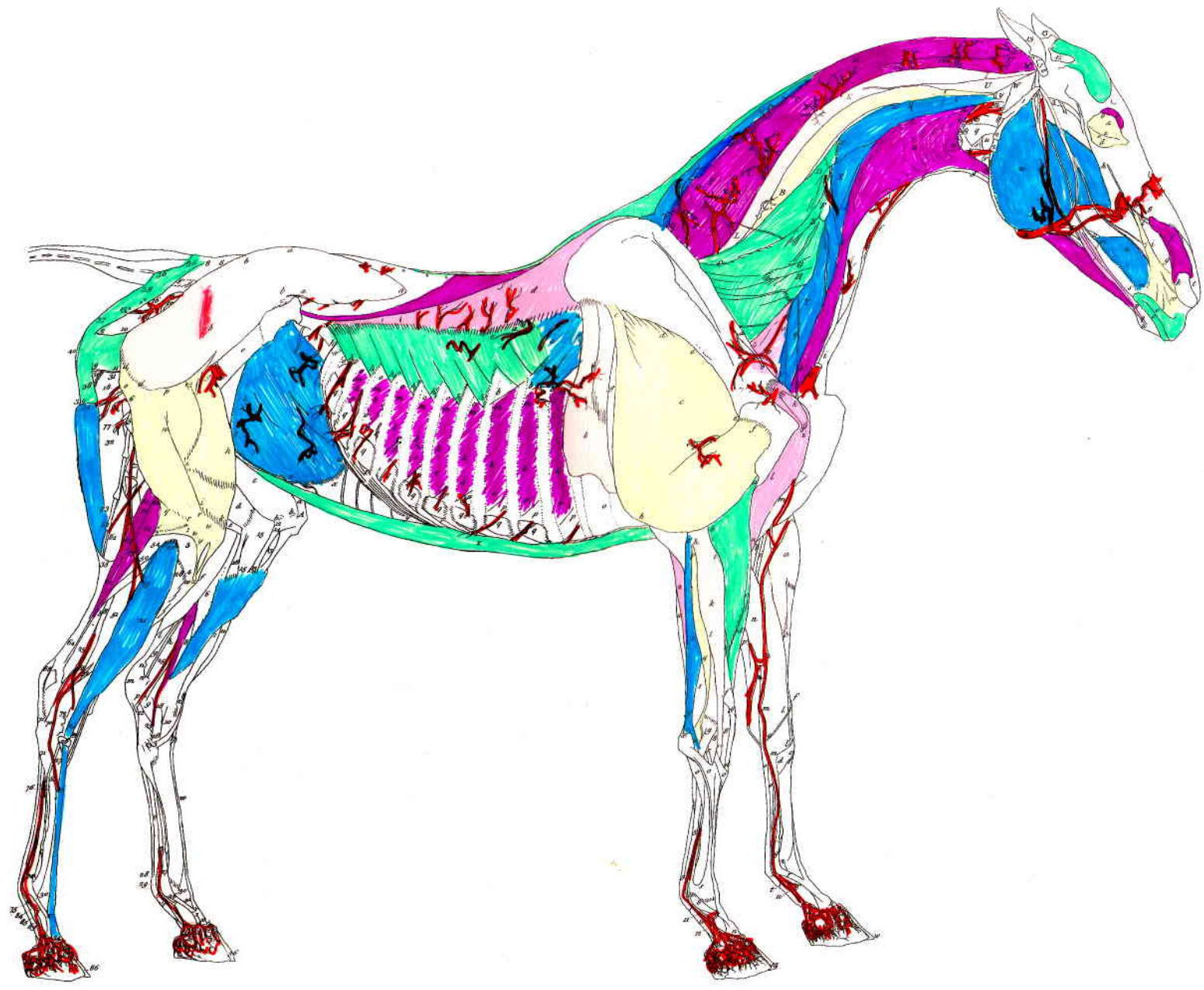


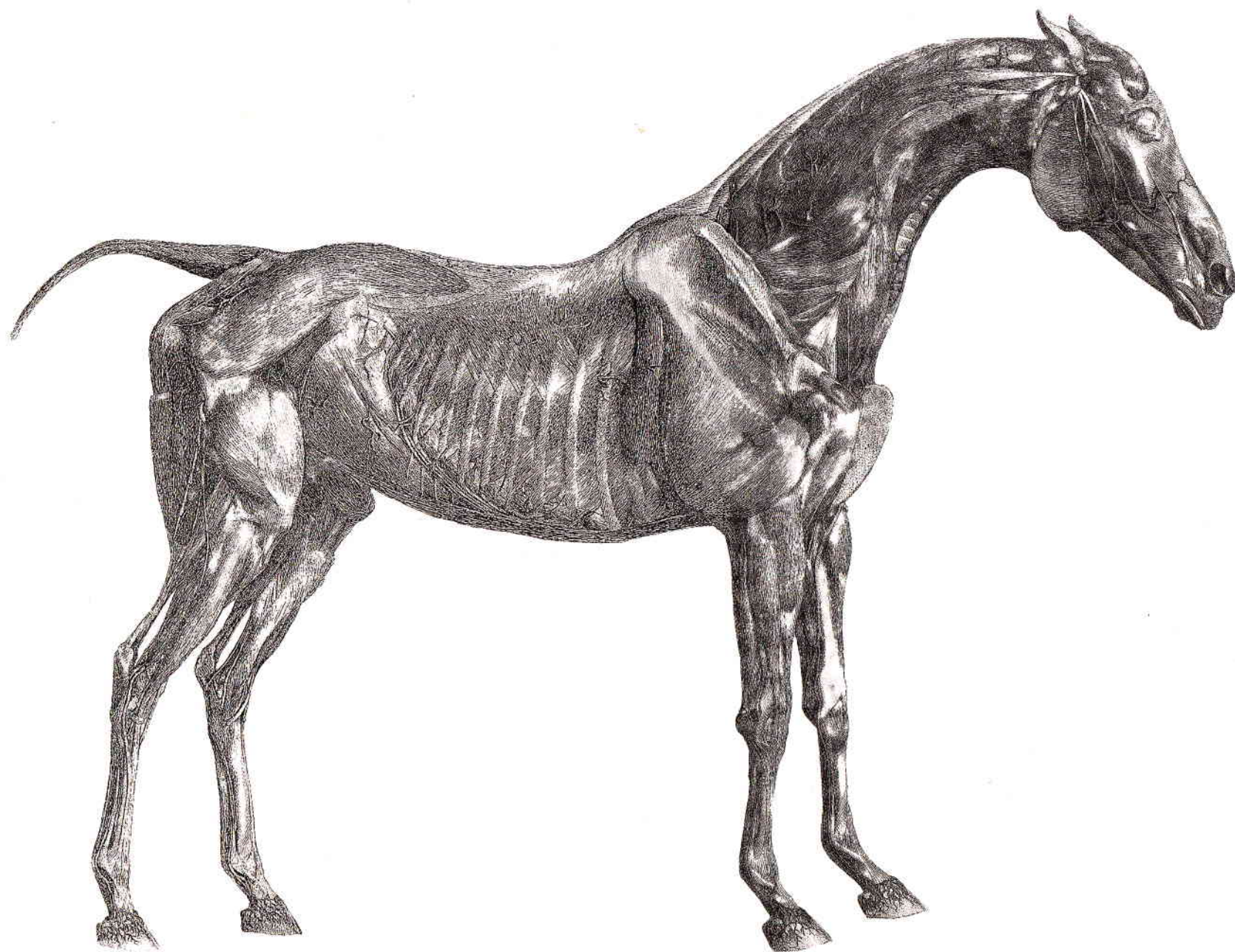


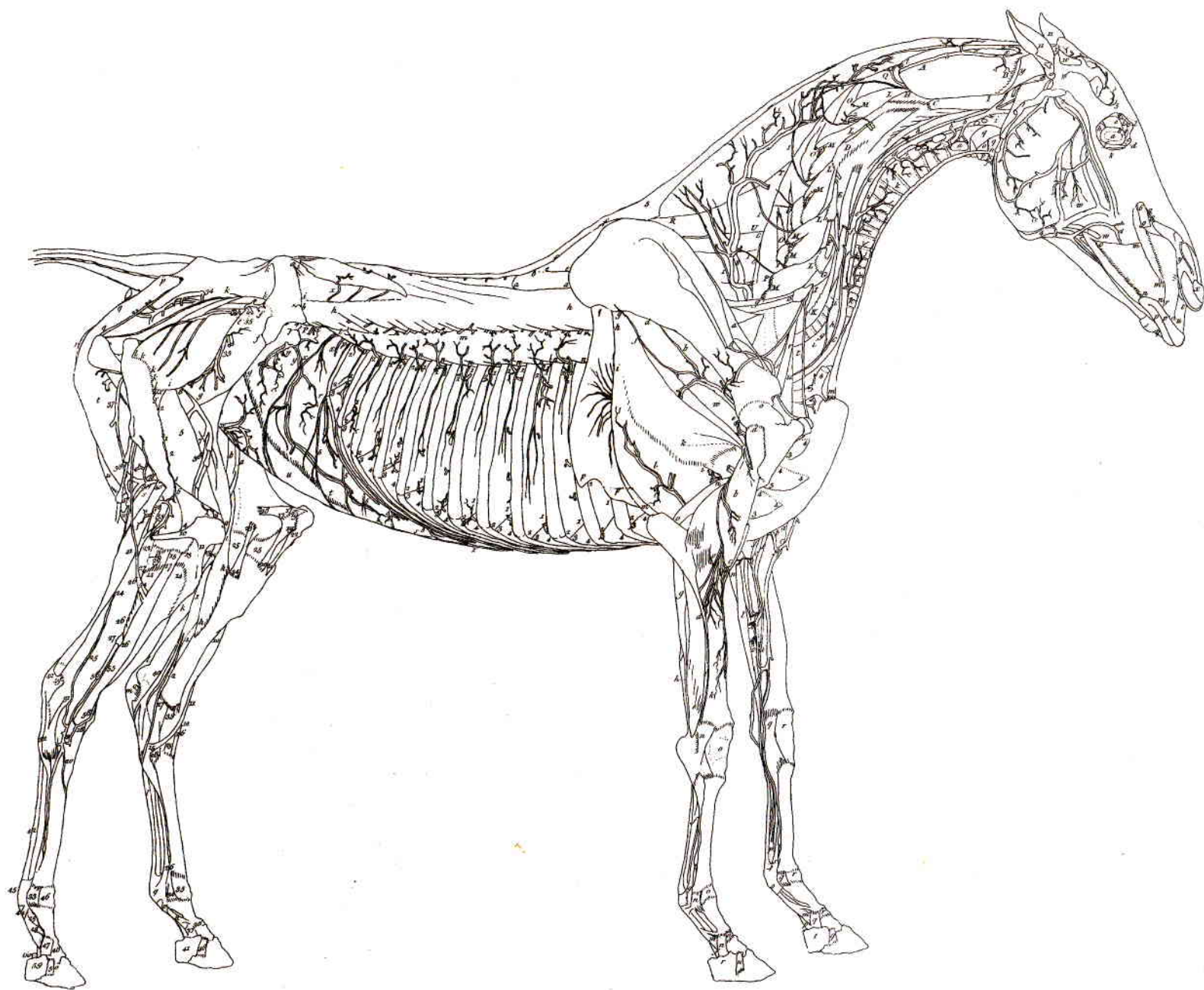


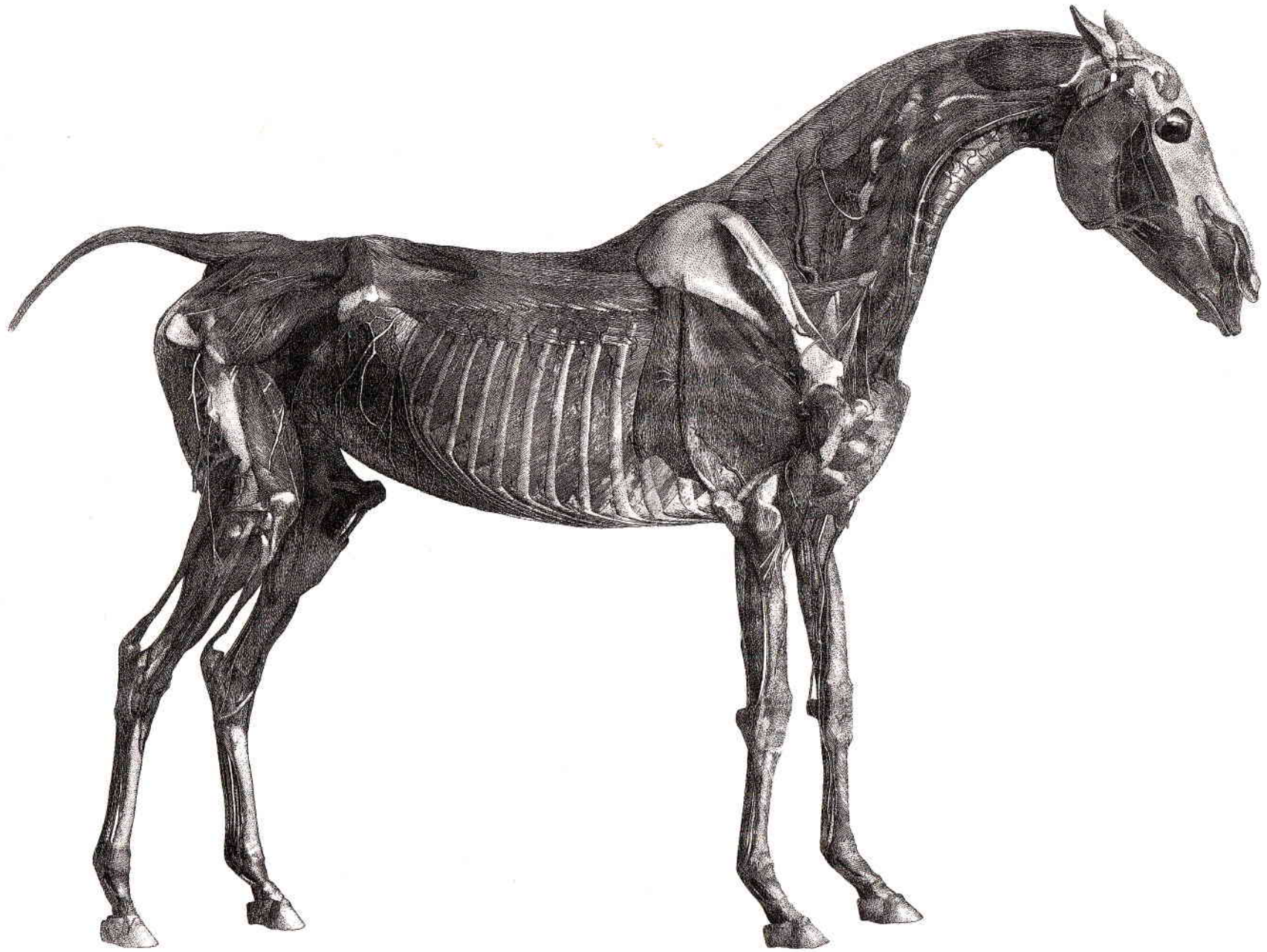


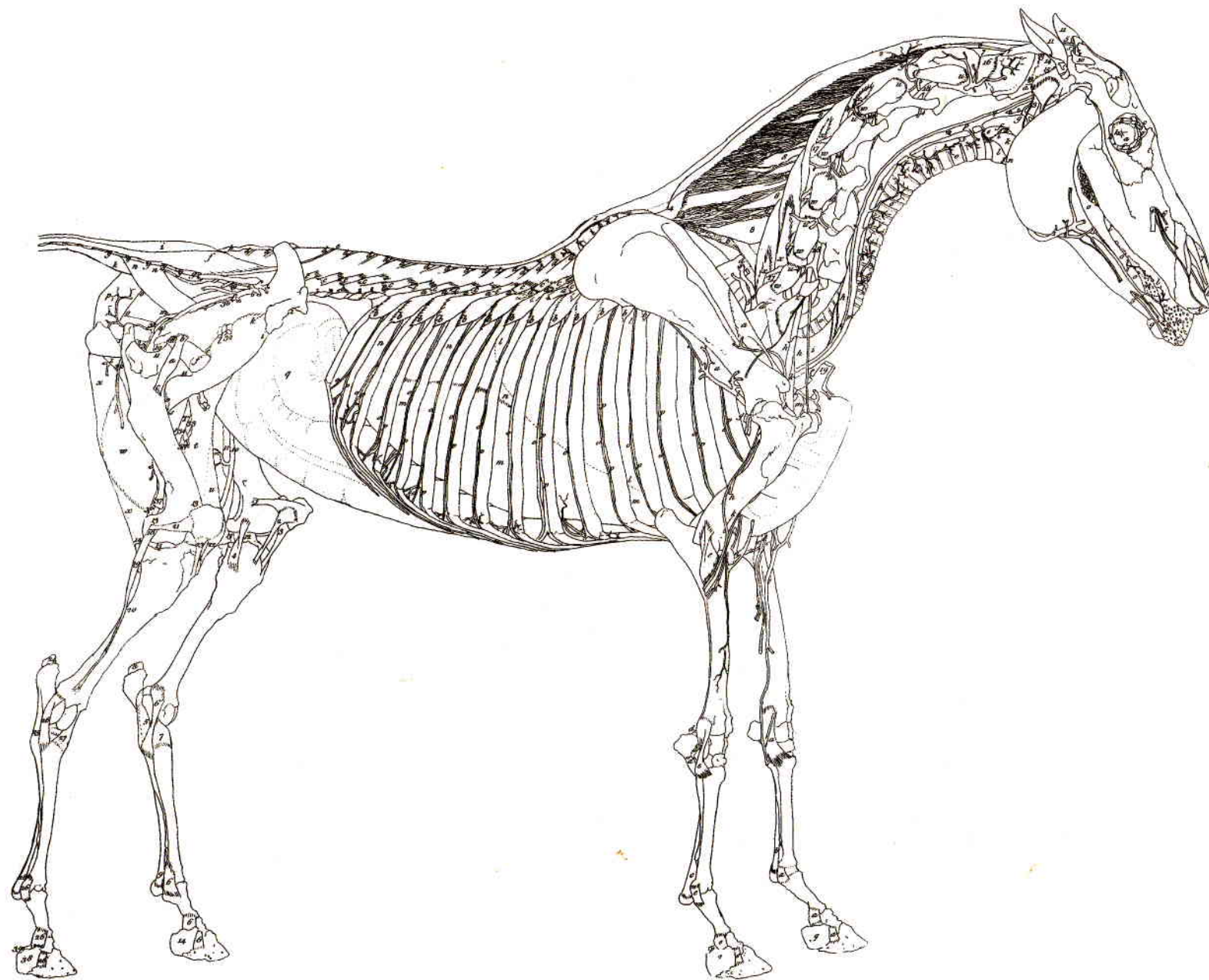


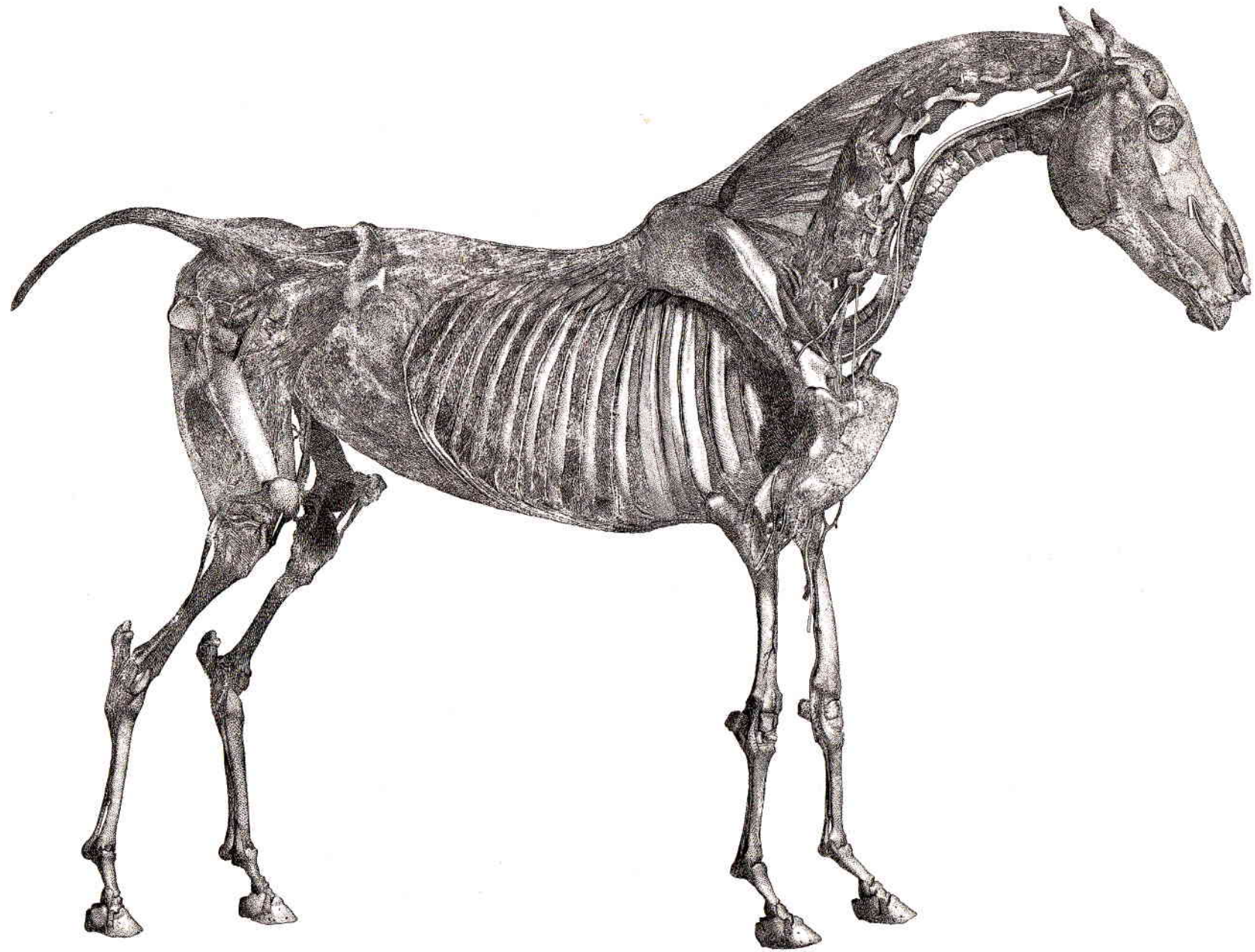




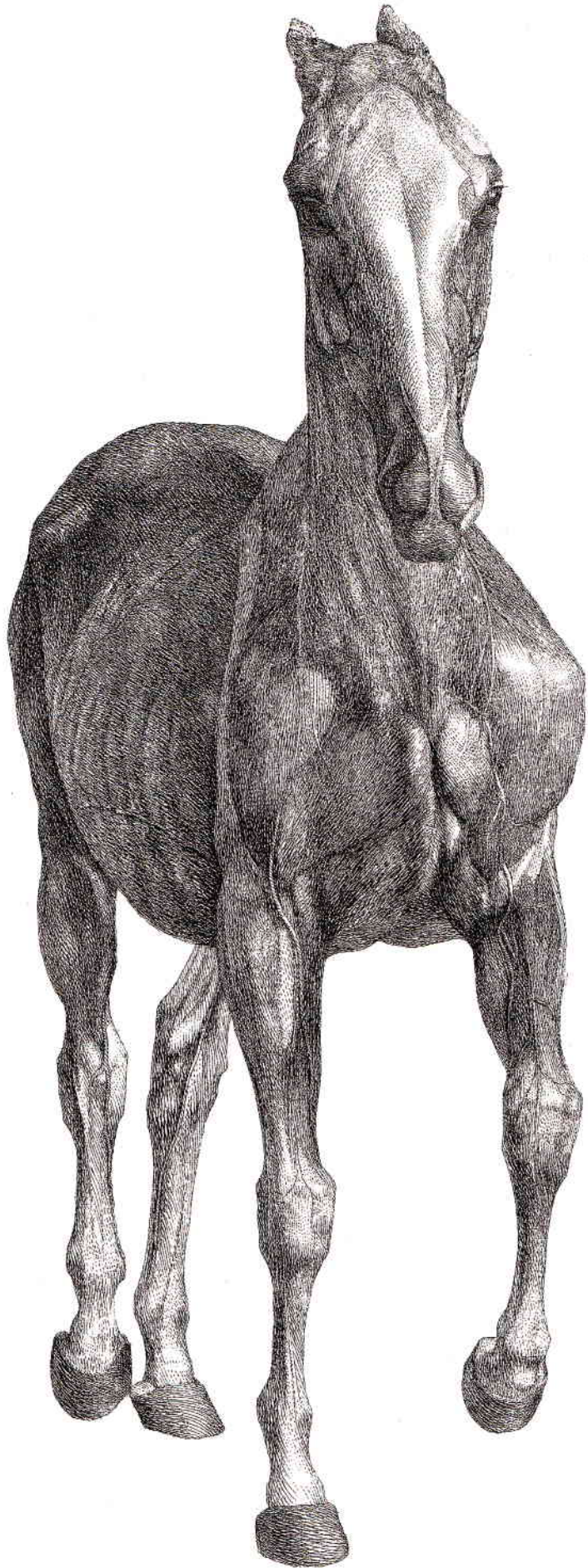


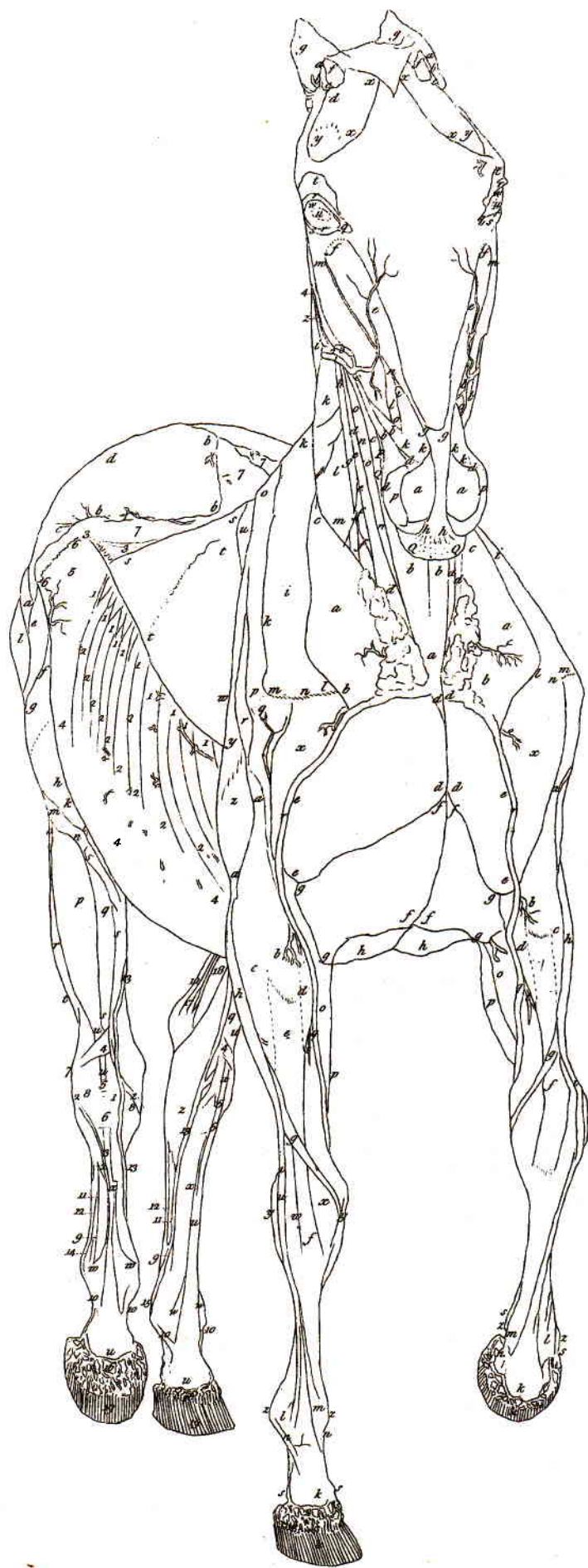


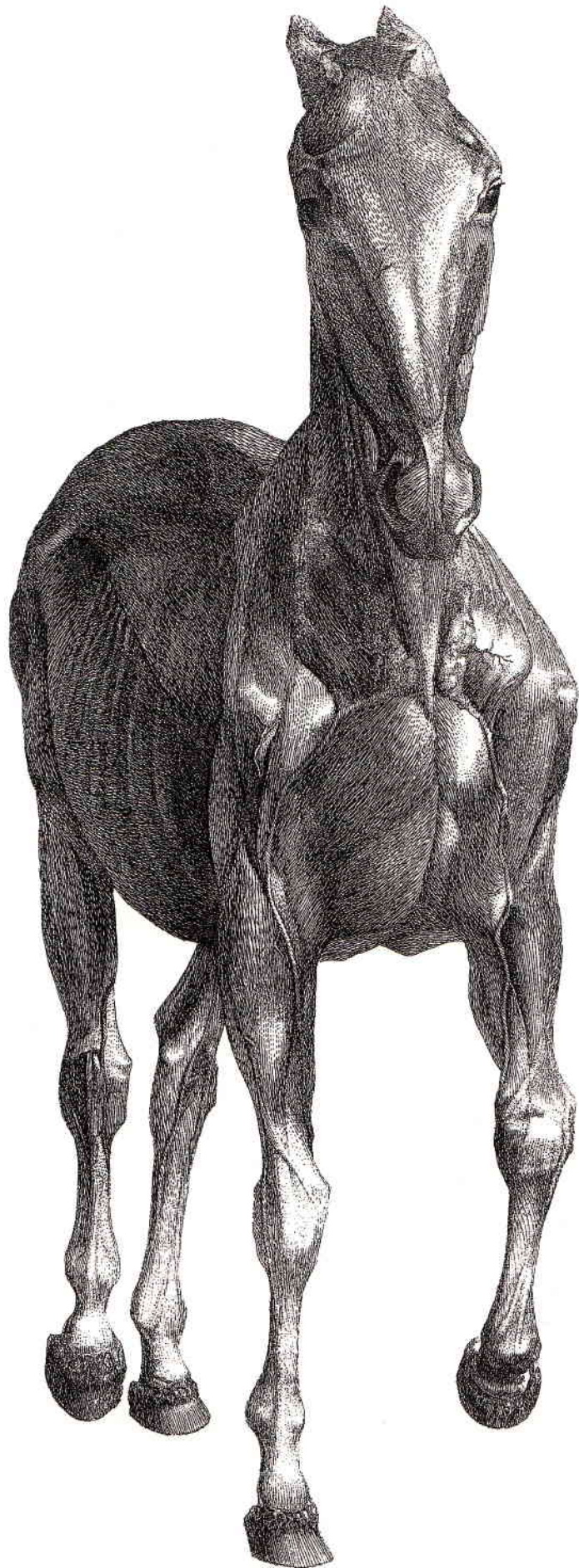


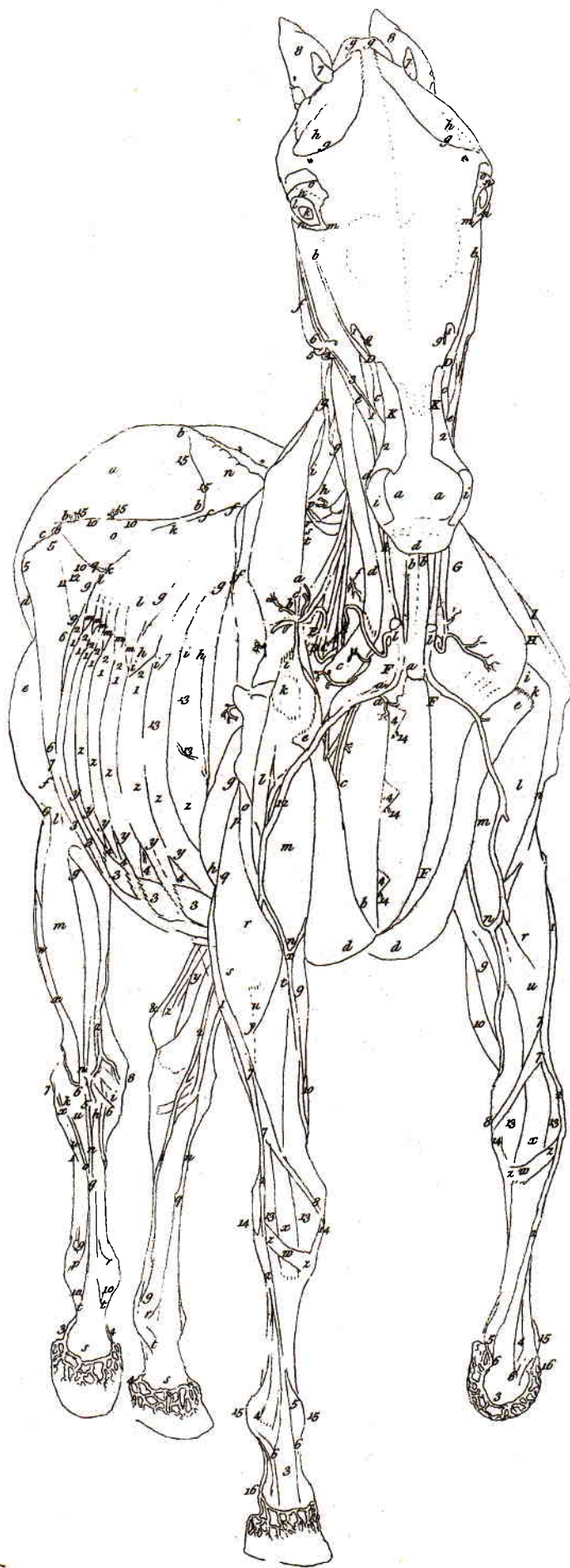


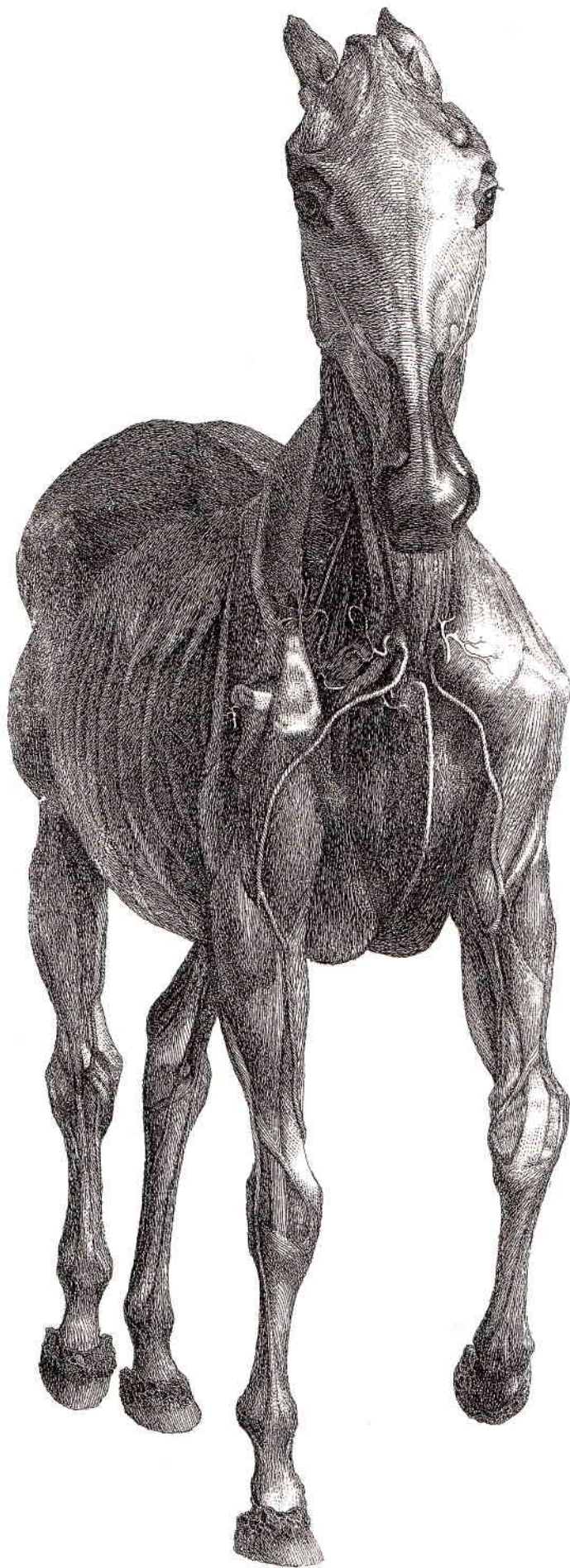






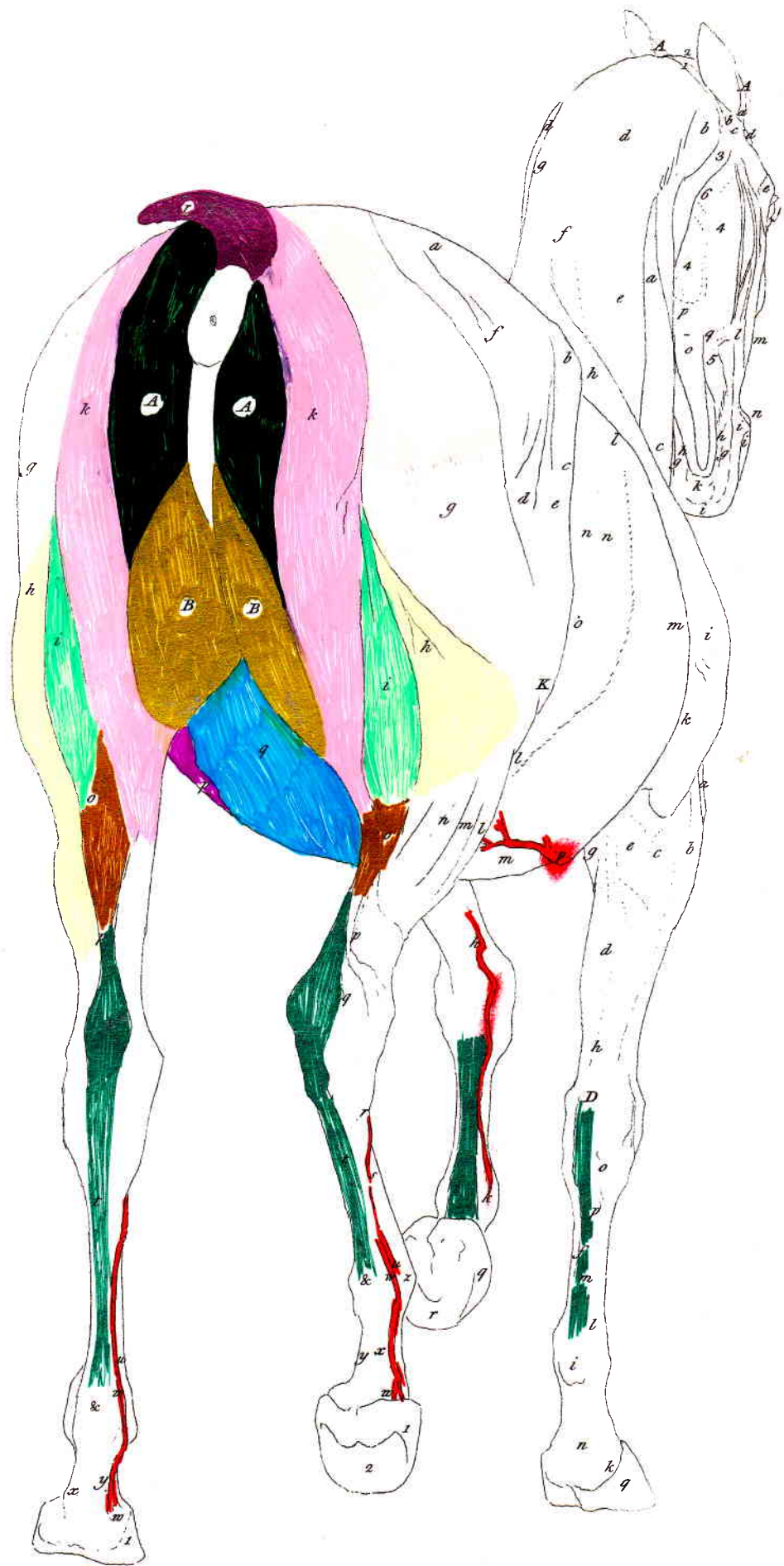


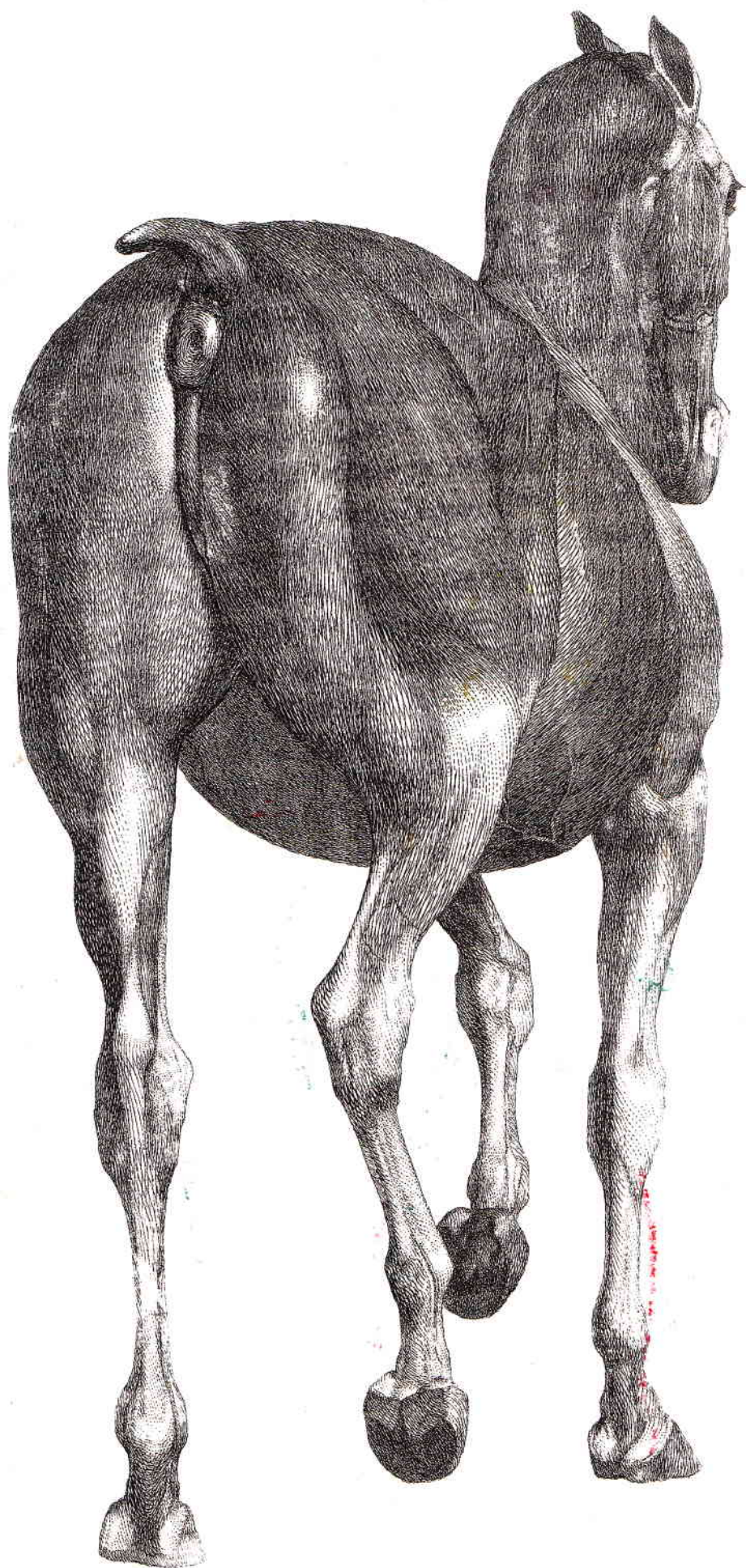


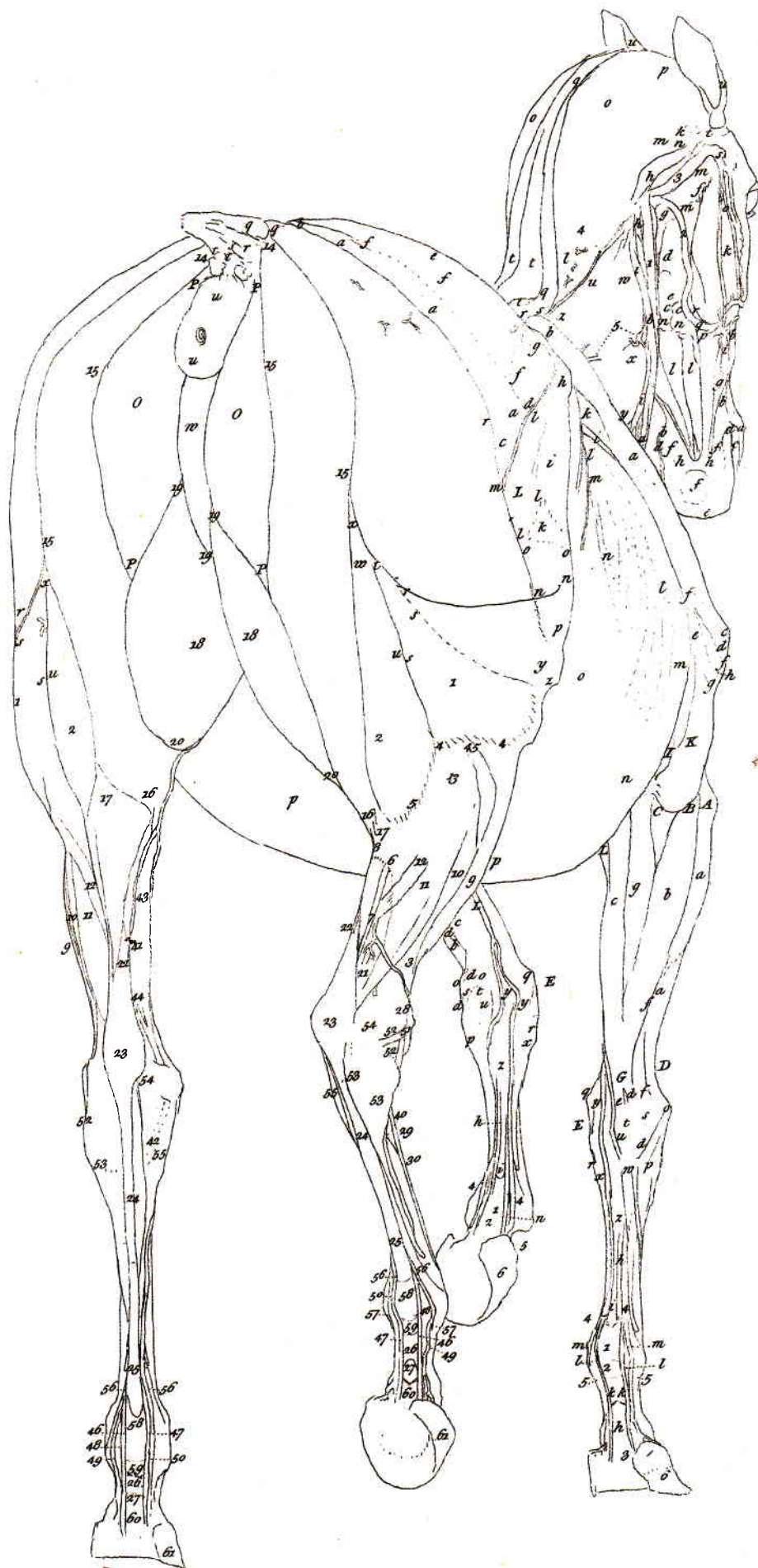


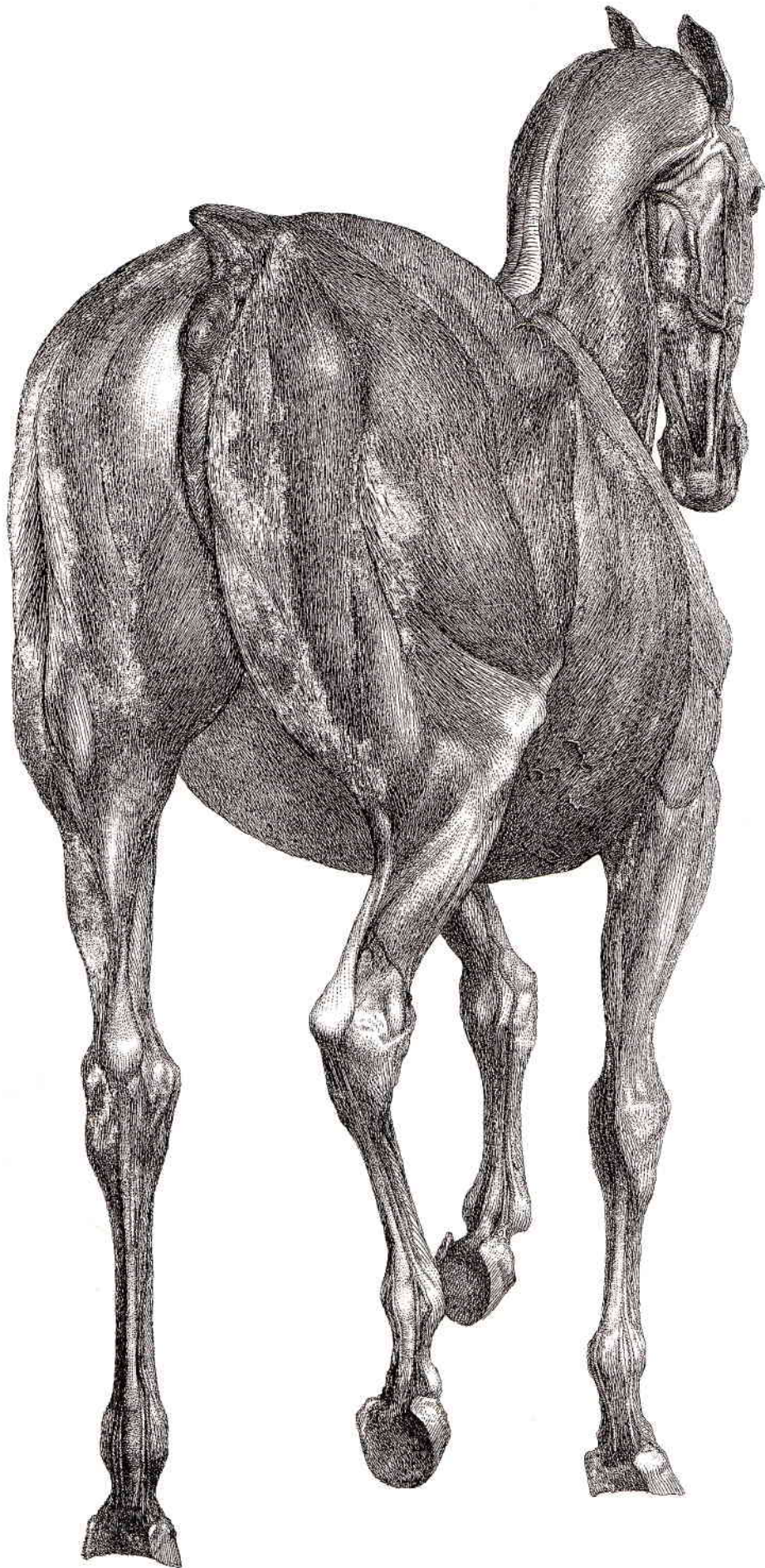




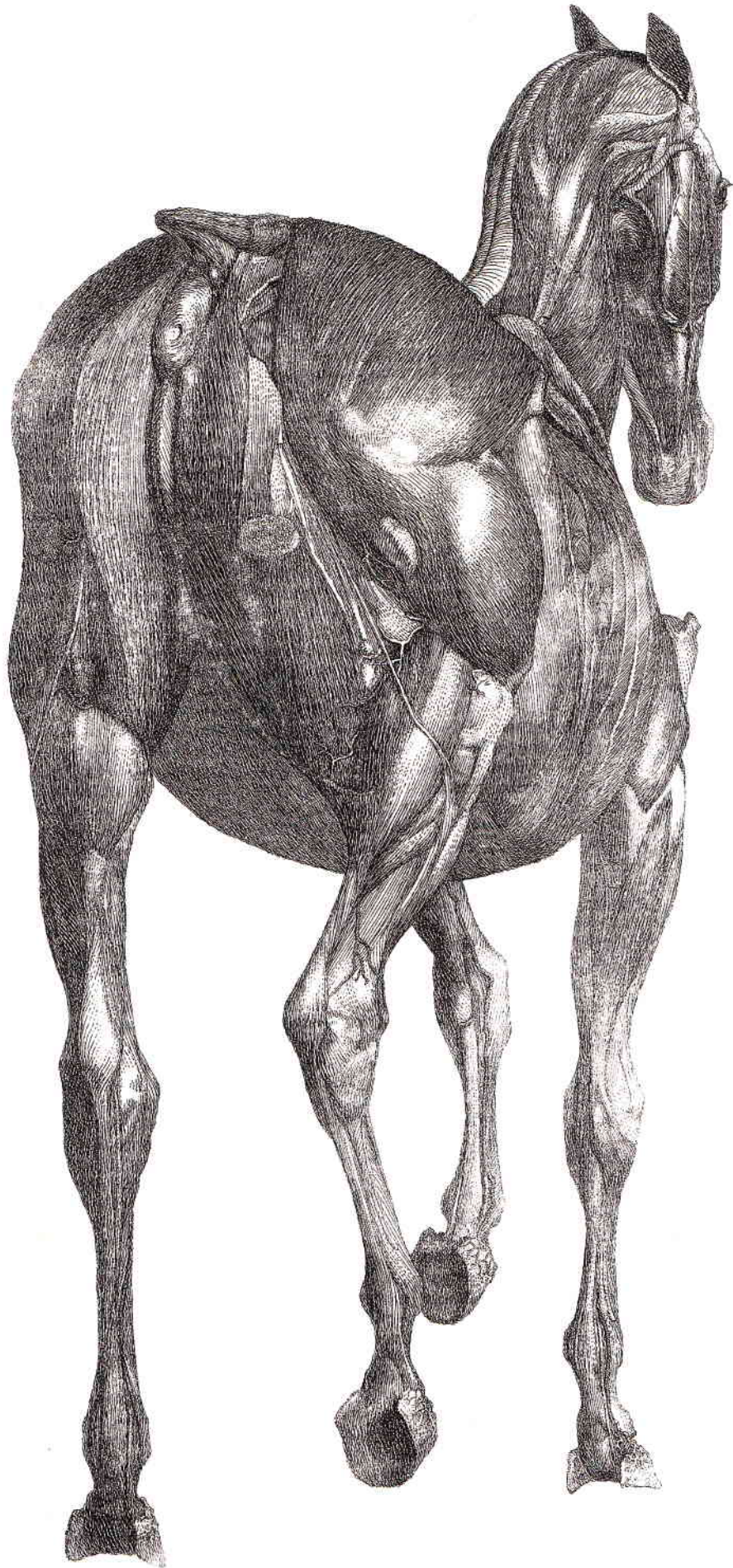


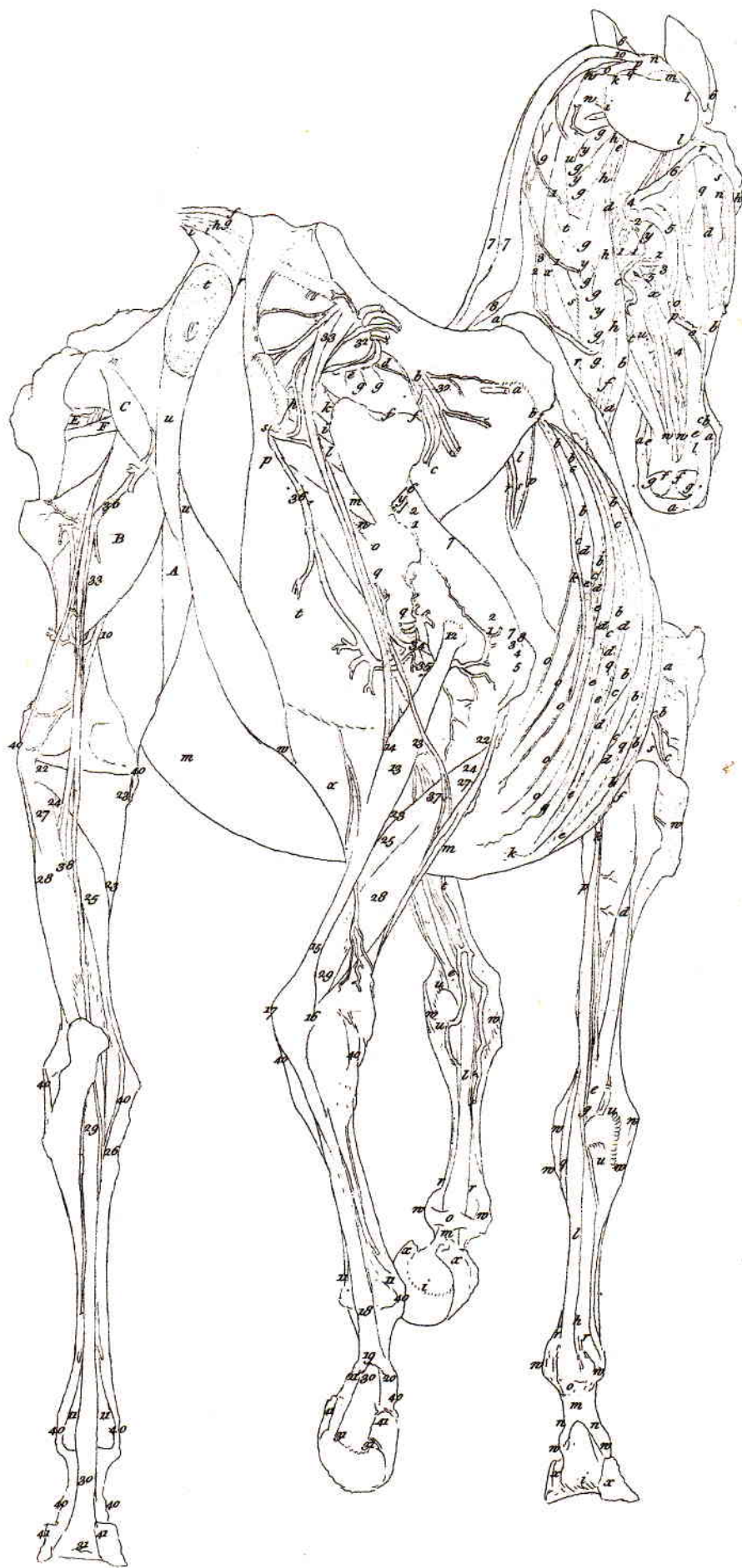


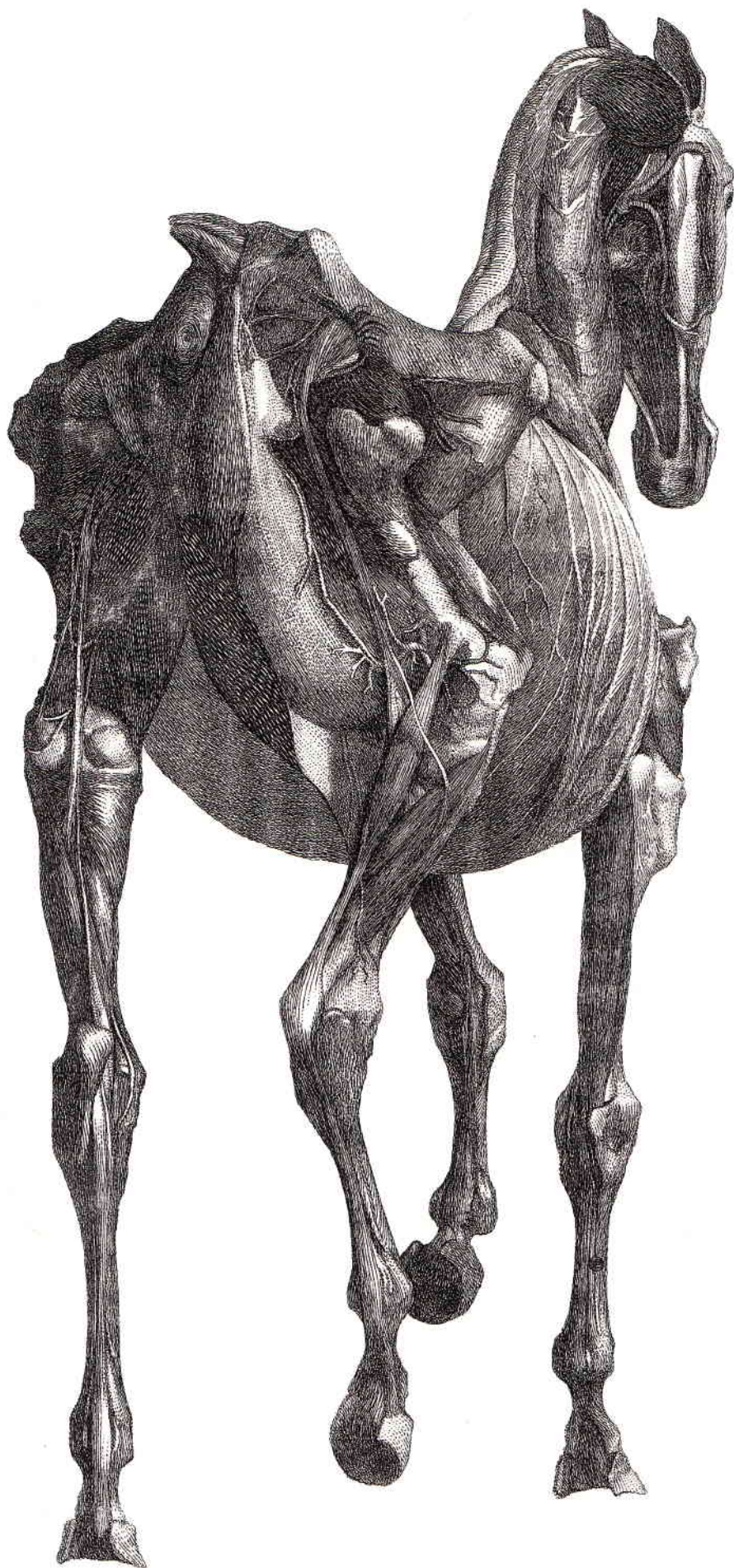




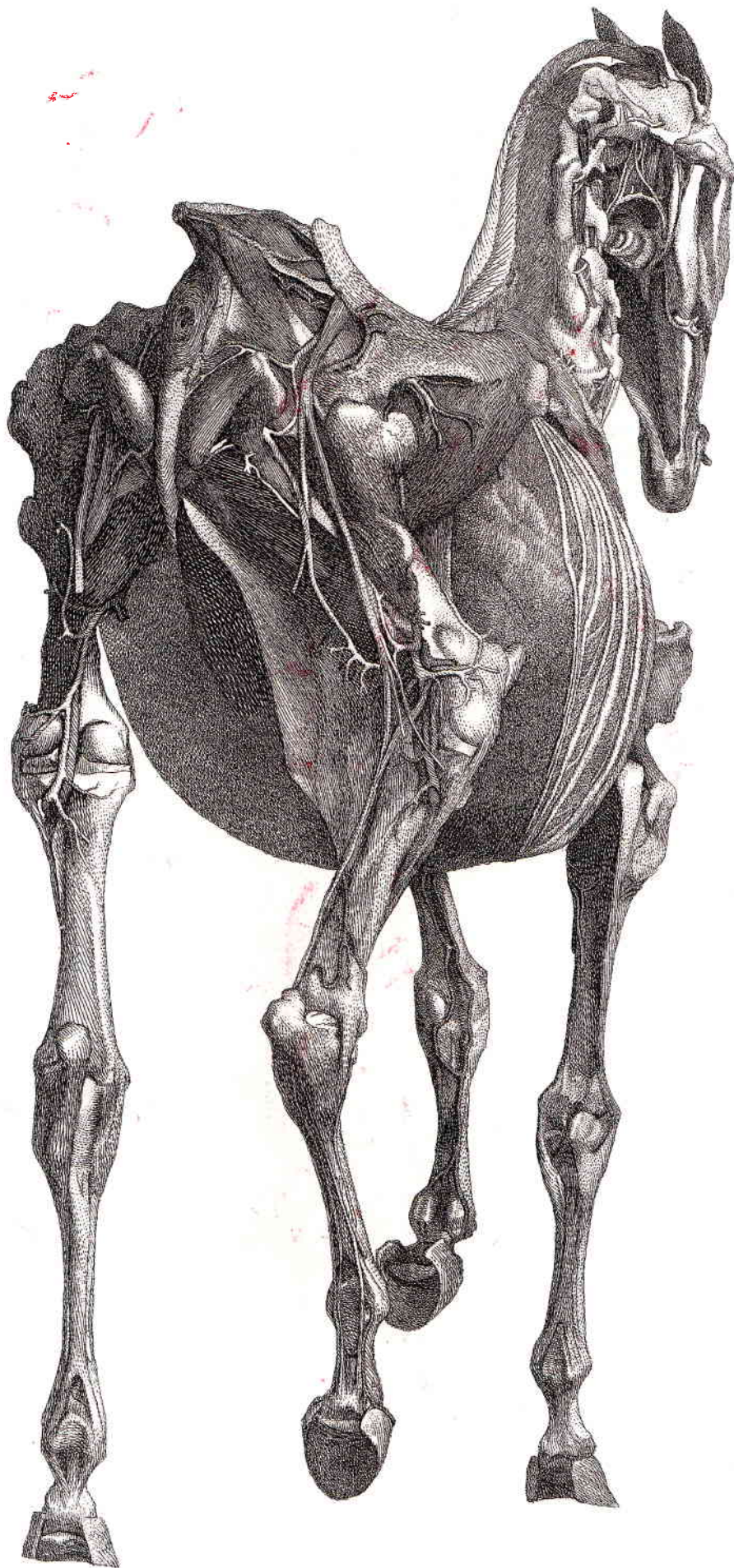












ANATOMY OF THE HORSE.

THE FIRST ANATOMICAL TABLE OF THE SKELETON OF A HORSE EXPLAINED.

Bones in the Head.

a a a b c d e f g The os frontis, or forehead bone; *b* a small hole which transmits an artery and nerve out of the orbit to the frontal muscle; *c* a suture which joins the frontal bone with the zygomatic, or jugal process of the temporal bone; *d* the coronal suture; *e* a squamous, or scale-like suture; *f* the part of it which makes a serrated or true suture, common to the frontal bone with the parietal bone; *g* a suture common to the frontal and nasal bones; *g* a suture common to this bone with the os unguis.

h i k The vertical, or parietal bone; *i* a squamous suture, common to the parietal bone with the temporal bone; *k* the lambdoid suture, common to the parietal bone with the occipital bone.

l m n o p q The occipital bone; *l* the occipital protuberance, which in this animal is very large, together with the internal spine, or protuberance, which, directly opposite to this, makes a strong body of bone in this place; betwixt *m* and *n* is a suture, which, in young horses, is easily separated, but afterwards becomes firmly united; *o* a process which makes a considerable addition to the mammillary process of the temporal bone; *p* the condyloid process, which is incrustated with a smooth cartilage.

r s t u v x Os temporis, or temporal bone; *r* the zygomatic, or jugal process of the temporal bone; *t* the part which articulates with the lower jaw bone; *u* is a part which, in young horses, may be easily divided, but afterwards becomes firmly united; it is distinguished by the name of os petrosa, or apophysis petrosa; *v* the mammillary process; *w* the bony meatus, or entrance of the ear; *x* a suture common to the cheek bone, with the zygomatic process of the temporal bone.

y z The orbital portion of the bone of the palate; *y* a suture common to it with the os frontis; *z* a suture common to it with the upper jaw bone.

1 2 3 4 5 6 Os unguis; *1* a small protuberance or roughness from whence arises the orbicular muscle of the eye-lid; *2* a sinus or cavity belonging to the nasal canal; *3* a suture common to this bone with the cheek bone; *4* a suture common to this bone with the bone of the nose; *5* a suture common to this bone with the bone of the forehead; *6* a suture common to this bone with the upper jaw bone.

7 8 9 10 Os jugale, or cheek bone; *8* a suture formed by the union of this bone with the upper jaw bone; *10* a suture formed by the union of the orbital part of this bone with the os unguis.

11 12 13 14 15 Os maxilla superioris, or the upper jaw bone; *12* the foramen or hole of the channel *12* which passes along the bottom of the orbit of the eye; *13* a suture common to this bone with the bone of the nose; *14* a suture common to the anterior part of this bone *15*, and the posterior part *11 12 13*.

16 Os nasi.

17 17 17 17 18 19 20 The lower mandible or jaw bone; at *17 17 17 17* are marked roughnesses, from which arise the tendinous parts of the masseter; *18* a hole out of which passes a nerve of the fifth pair and blood-vessels to the chin; *19 19* the coronal or acute process; *20* its condyle or head that is joined with the temporal bone.

21 A moveable cartilaginous plate which is interposed in the articulation of the lower jaw.

The Vertebrae of the Neck.

A E E a b b c d e The atlas or occipital vertebra; *A E* the posterior and superior part of the left side of this vertebra, which articulates with the condyloid process of the occipital bone; *A* the anterior and superior part of the right side of the atlas, which articulates with the occipital bone as a large tubercle on the anterior part of this vertebra; *b b* the transverse processes; *c* the protuberance, tubercle, or inequality on the posterior part of this vertebra, which seems to be in the place of a spinal apophysis; *d* the posterior, and inferior part of the right side of this vertebra, which articulates with the second vertebra; *e* the transverse hole through which a nerve and blood-vessels pass. *N.B.* This vertebra receives the articulating part of the occipital bone, as well as the superior articulating part of the second vertebra: the rest of the vertebrae in the inferior articulating parts of their bodies receive the superior articulating parts of the vertebra below, and have their superior articulating parts received by those above, so it is with the back and loins; *E* the superior and posterior holes.

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123456789101112131415161718 Shew the external side of the ribs on the right side, and internal on the left side.

f g The inner side of the left scapula or shoulder-blade.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z The right scapula; *A* its spine; *B* the coracoid apophysis, or epiphysis; *C* its inferior costa; *D* its superior costa; *E* its base; *F* fossa sub-spinalis; *G* fossa supra-spinalis; *H* a cartilaginous continuation of the scapula.

Bones in the right upper limb.

a b c d e f g h i k l m The humerus or bone of the arm; *b* denotes a protuberance into which the teres minor is inserted; *c d e f g* the upper head; *c d* three protuberances which form two sinuses or grooves which are pretty deep and incrustated with a smooth cartilage; they serve to confine the heads of the biceps muscle from slipping sideways; but by their smooth cartilagenous incrustation they suffer them to slide easily up and down; the heads of this muscle are united over the middle protuberance *d* and the place of their union is covered with fleshy fibres; *h* the part of the head which is joined to the cavity of the scapula, covered with a smooth cartilaginous crust; *i* the external condyle of the lower head; *k* the head covered with a smooth cartilage with which the radius is articulated; *K* the double articular eminence; *l* the anterior fossula or sinus that receives the upper head of the radius when the cubit is bent as much as it can be; *m* the posterior sinus which receives the olecranon of the ulna when the cubit is extended as much as it can be.

n o p q r The radius; *n* the upper head; *o* a protuberance into which the tendon of the biceps muscle of the arm and brachialis are inserted; *p q r* the lower head of this bone; *p* denotes a sinus or groove through which goes the tendon of the extensor carpi radialis; *q* a sinus through which goes the tendon of the extensor digitorum communis; *r* a sinus through which goes the tendon which is analogous to the tendon of the extensor miltari digiti.

s t u v The ulna; *s* the olecranon or elbow; *t t* the part which articulates with the humerus; *u* the lower part, which is very small and in aged horses becomes one bone with the radius.

w x y z The bones of the carpus; *w* os sphæroides or navicular; *x* os lunare; *y* os cuneiforme; *z* os pisiforme or orbicular; (the bone called trapezium, which articulates with the thumb is not in the horse; and the bone which lies next it called the trapezoid, cubical, or least of the multangular bones of the wrist, is not seen on this limb in this table; but on the left upper limb in this table is marked *1*.) *2* os magnum or the great round-headed bone of the wrist; *3* the uniform or hook-like bone of the wrist.

4 5 6 7 The metacarpal bones in this animal called the shank-bones, of which that marked *4* is equal to two of the metacarpal bones joined together, viz. that of the middle finger, and that of the ring finger; *4* the upper head by which it articulates with the carpus; *5* the lower head, in this place incrustated with a smooth cartilage; *6 7* an imperfect metacarpal bone in the place of that in the human skeleton which belongs to the little finger; *6* the upper head by which it articulates with the uniform bone of the carpus; *7* the lower head, which is very small, and (the bones of the little finger being wanting) forms no articulation.

10 11 Two bones which are always to be found in this joint; such bones are called sesamoid bones in the human skeleton, and are frequently found in the first joints of the index and little finger, and in the joints of the thumb; they serve to throw the bending tendons farther from the centre of motion in this joint and form a proper groove for them to slide in.

12 13 A bone which is equal to the bones of the phalanges of the middle and ring finger in the human skeleton; in a horse this is called the great pastern.

14 15 The bone of the second phalanx of the fingers, or the little pastern or coronary bone.

16 The bone of the third phalanx, in a horse called the coffin bone.

17 A sesamoid bone lying over the posterior part of the articulation of the coffin bone with the coronary bone, or the two last phalanges of the fingers.

In the left upper limb.

c d e The os humeri; *c d e* three protuberances which form two sinuses or grooves which are pretty deep and incrustated with a smooth cartilage.

o p The radius; *o* a protuberance in the upper head into which the biceps muscle of the arm and brachialis internus are inserted; *p* denotes a sinus or groove in the lower head in which the tendon of the extensor carpi radialis lies.

u v A small part of the ulna which in aged horses becomes one bone with the radius, but in young ones is joined to it by ligaments.

w x y z The bones of the carpus; *w* os sphæroides or navicular; *x* os lunare; *y* os pisiforme or orbicular; *z* os trapezium; *1* os magnum, or the great round-headed bone of the wrist.

4 5 6 7 The shank or metacarpal bones; *4 5* is equal to the metacarpal bones of the middle and ring fingers joined together; *4* the head by which it articulates with the bones of the carpus; *5* the lower head incrustated with a smooth cartilage; *8 9* an imperfect metacarpal bone in the place of that

2

f g h i k l m n *1 2* The epistropheus or second vertebra of the neck; *f* the inferior part of the body which receives and is sustained by the third vertebra of the neck; *g* the superior part of its body, which is received by and sustains the atlas or first vertebra of the neck; *h* the anterior protuberance of the body of this vertebra; *i* the transverse process; *k* the spinal process; *l* the lower oblique process on the right side, which is covered with a smooth cartilage within the dotted lines; *m* the lower oblique process on the left side; at *1* is a hole where the vertebral artery goes in and comes out at *2*, called the transverse hole.

o p q r s t u v w x y The third vertebra of the neck; *o* the anterior protuberance of the body of this vertebra; *p* is the superior part of the body of this vertebra, which is received into the inferior part of the body of the second vertebra; and *q* is the inferior which receives the superior part of the body of the fourth vertebra; *r* the transverse process; *s* the right upper oblique process; *t* the right lower oblique process; *u* the spinal process; *v* the transverse holes through which the vertebral arteries and veins of the neck pass; *w* the left upper oblique process; *x* the lower oblique process seen through the large foramen or hole which contains the medulla spinalis, or spinal marrow.

N.B. This explanation may serve for the fourth, fifth, sixth, and seventh vertebra of the neck; only that the anterior protuberance is wanting in the sixth; but instead of that there is a process on each side which is obliquely placed a little more anteriorly than the transverse process but ascends obliquely outwards to join with it; it is marked *z*.

A continuation of the bones of the spine from the neck.

1 a b c d e f g The first or uppermost vertebra of the back; *a* the body; *b* the transverse process; *c* the upper oblique process; *d* the lower oblique process; *e* the spinal process; *f* the lower oblique process of the left side, seen through the large hole which contains the medulla spinalis; *G* the ligament interposed betwixt the bodies of the first and second vertebra of the back.

2 5 6 7 8 9 10 11 12 13 14 15 16 17 18 The vertebrae below the first, to the letters of which the explanation of the first will answer.

A B C D E F The six vertebrae of the loins; the explanation of the first vertebra of the back will answer to the vertebrae of the loins.

g g g h i i i i k k l l l m m m m The os sacrum or great bone of the spine; *g g g* the anterior part or body of this bone which, in young animals, is divided into as many bodies as there are spines in this bone, it being then like five vertebrae, whose transverse processes make the unequal rough part *h* of this bone; *i i i i* the five spines; *k k k* three inferior and anterior holes, which transmit the nerves on each side; *l l l* posterior foramina or holes; these foramina, both anterior and posterior, answer to the foramina through which are seen, in this table, the oblique processes of the left side of the vertebrae both of the neck, back, and loins; the transverse processes of this bone being joined, make two holes, one anterior, the other posterior, of which there is but one in the neck, &c. the transverse processes not being joined; *m m m* the parts of this bone made by the union of those parts which were oblique processes when it was divided into five vertebrae.

n o p q The first bone of the coccyx or tail; *n* the body, *o* the transverse process, *p* the upper oblique process, which articulates with the os sacrum; there is no lower oblique process; *q* the spine; *r* the ligament interposed betwixt the bodies of the first and second bone of the tail, tying them together.

The same letters on the rest of the bones of the tail will answer to the explanation of the first, only it is to be observed, that there is but little appearance of any protuberating parts after four or five of the uppermost; and in the second the uppermost oblique process forms no articulation with the first, there being no lower oblique process, on any other of these bones as observed before: the spinal process of the second bone of the tail is double, arising from the sides of the spinal channel, but not rising high enough to meet over the medulla spinalis as those of the first do; it makes two small processes: these protuberating parts diminish so fast that after the fifth or sixth bone they almost disappear, and the bones below are of an oblong figure thickest towards their extremities. There are 18 bones in the tail.

Bones in the thorax and shoulder-blades.

a a a a b The sternum or breast bone, of which the parts *a a a a* are bony, the rest, *b* is chiefly cartilaginous, or ligamentous, by which the bony parts are connected together.

1 c d e The first rib; *c* the head by which it is articulated with the transverse process of the first or uppermost vertebra of the back; *d* the anterior or former part of the said head which is connected to the bodies of the seventh vertebra of the neck and first of the back; *e* the cartilaginous end by which it is continued to the sternum.

This explanation will serve for the rest of the ribs, but it is to be observed, that the eight superior ribs only are connected to the sternum, the others are called false ribs.

4

which belongs to the fore-finger in the human skeleton; *8* the upper head by which it articulates with the trapezoid bone of the carpus; *9* the lower head which is very small, and the bones of the fore-finger being wanting it forms no articulation.

10 11 12 13 14 15 16 17 The three bones of the finger, or the great pastern; the little pastern or coronary bone and coffin bone with the three sesamoid bones which will all answer to the explanation on the right upper limb in this table.

In the pelvis.

a b c d e f g h i k l l l l The right os innominatum or osseon bone including three others; *a b c d* the os ilium, hip, or flank bone; *b* the spine; *c* the anterior part of the spine; *d* the posterior part; *d* the protuberance from which arises the rectus muscle of the leg; *e f f f* the os ischium, or high bone; *e* the acute process; *f* the tubercle of the ischium; *g g* the posterior notch for the passage of the internal obturator muscle; *h i i* the os pubis; *i i* the spine or ridge of the os pubis; *k* the great foramen of the ischium and pubis; *l l l* the external margin of the acetabulum.

a b c d e f h i k l l l The left os innominatum, which will answer to the explanation of the right os innominatum, with this difference only, that the left shows the external view and this the internal view.

In the lower limbs.

a b c d e f g h i The right femur or thigh bone; *a* the body or middle of this bone; *b c d d e* the upper extremity, of which, *b* is the neck; *c* the head incrustated with a smooth cartilage where it is jointed into the acetabulum; *d d* the great trochanter or spoke; *e* the less trochanter or spoke; *f* a very prominent part of the linea aspera, into which the external glutens is inserted along with a part of the fascia lata; *g* a large fossa or notch, out of and from the borders of which the external head of the gemelli, and the plantaris muscles arise; *h i* the lower extremity; *k* the outer condyle of the lower head, which at *i* is covered with a smooth cartilaginous crust.

k l m n o p p p p The left femur or thigh bone; *l* the less trochanter; *m* a roughness from which arises the internal head of the gemelli; *n* the inner condyle; *o* the outer condyle; *p p p p* the smooth cartilaginous crust which covers the part of this lower head where it is jointed to the tibia and patella.

q q q r r The patella or knee-pan bones; *r r* that part which is covered with a smooth cartilaginous crust which forms part of the joint at the knee.

s s The inner similar cartilages which are interposed in the joints of the knees.

t t The outer similar cartilages in the joints of the knees.

u v w x y z The tibia or greater bones of the legs; *u* the upper head; *v* that part of the upper head which, belonging to the joint of the knee, is covered with a smooth cartilaginous crust; *w* a protuberance in which terminate the anterior ligaments which come from the patella and tie it to the tibia; *y* the lower head of the right tibia; *z* the lower head of the left tibia.

1 2 1 The fibula or small bones of the legs; *1* the upper head; *2* the lower extremity which ends here almost in a point.

3 4 5 6 7 The astragali or osseal bones; *4 5* the part which forms the juncture with the bone of the leg covered with a smooth cartilaginous crust.

7 7 8 9 The calcanei or heel-bones; *8* the projecting part that sustains the astragali; *9* the tubercle into which is inserted the tendon of the gemelli, and to which the tendon of the plantaris is attached by ligaments.

10 The cubical bone of the tarsus or ancle.

11 11 The navicular bones of the tarsus.

12 12 The middle cuneiform bones of the tarsus.

13 The less cuneiform bone of the tarsus.

N.B. What are called the great cuneiform bones of the tarsus in the human skeleton are (as well as the bones of the great toe) wanting in this animal.

14 15 16 17 14 15 16 18 19 The bones of the metatarsus or instep; *14 15* a bone which is equal to the metatarsal bones of the second and third little toes both together in the human skeleton; *14* the upper head which articulates with the three lower bones of the tarsus; *15* the lower head, in this place covered with a smooth cartilaginous crust, where it articulates with the upper head of the bone of the first phalanx or order of the small toes; *16 17* an imperfect metatarsal bone in the place of that which, in the human skeleton, belongs to the little toe; *16* the upper head, by which it articulates with the cubical bone of the tarsus; *17* the lower head which is very small, and (the bones of the little toe being wanting) forms no articulation; *18 19* an imperfect metatarsal bone in the place of that which, in the human skeleton, belongs to the first of the small toes; *18* the upper head by which it articulates with the less cuneiform bone of the tarsus; *19* the lower head which is very small, and (the bones of the first of the small toes being wanting) forms no articulation.

20 21 20 21 Bones which are always to be found in these joints, two in each, such are called

The ligament arising at *u* runs down to join the tendon *f* a little below *f*, running over the tendon *i* till it comes to its insertion near the edge of the tendon *f*; the part *u f w* sends the principal part under the tendon *e f g* to be inserted into the metacarpal bone at *b f*, the part which runs over that tendon, or those tendons, joins in with the membranous production of the pectoral muscle and carnosus membrane.

g The hoof.

In the lower or posterior Limb.

a b c d e f g h i k l m n o p q r s t u v x y z g: Fascia lata, and musculus facies lateralis, with the membrana carnea, and expansions of the muscles; *a* the part which is a continuation of the tendon of the latissimus dorsi, which arises free from the muscle gluteus medius, which lies under it; *b* the origin of the musculus facies lateralis from the spine of the ilium.

c The anterior fleshy part; *d* the posterior fleshy part; *e* the tendon.

f The part under which the gluteus externus lies and from which it has a fleshy origin; this part is much thicker or stronger than the part *a*.

g h i The part under which the biceps tibiae lies; this muscle in its superior part, arises from the fascia lata.

k The semi-tendinosus lying under the said fascia, from which it also arises in the superior part.

k The patella with its external lateral ligament which binds it to the os femoris, and its inferior anterior ligament, which binds it to the tibia, protuberating under the fascia.

l The extensor longus digitorum; *m* peroneus; *n* flexor digitorum pedis; *o* Gemellus.

p Tendons formed by these fasciae and expansions to join in with the extensors of the tarsus.

q Nerves expanded upon these fasciae, or sent off to the external parts, as the adipose membrane and cutis. They are branches of the sciatic nerve.

r A sort of tendon formed by the sciacia, &c. which may probably assist the extensor digitorum when the tarsus is extended.

s The tendon of the extensor digiti.

t The tendons of the flexors.

u The interosseus, &c.

v w Veins arising from under the hoof, called venae plantares, they run into the vena tibialis posterior.

x Nervus plantaris externus.

y A ligament sent off by the interosseus, &c. and the capsule of the fetlock joint to join and bind down the tendon of the extensor digitorum pedis.

About *z* these fasciae have an attachment as they pass over the tendon and ligaments.

g A sort of spongy, fatty substance, probably a production of the membrana adiposa, lying over the protuberating part of this joint to preserve the bending tendons from bruises when the fetlock touches the ground.

The fasciae membrano-tendinous expansions, &c. cover all these muscles, ligaments, blood-vessels, nerves, &c. forming a pretty strong coat over them; the muscles, &c. only making their appearance by protuberating under them, which they will do even when they are covered by the external skin.

A The hoof.

Muscles, &c. protuberating under the membrana carnea in the left upper limb, viz. on the cubit, carpus, metacarpus, and extremity of the limb.

a b Extensor carpi radialis; *a* the fleshy part; *b* the tendon.

c The tendon of the muscle which is analogous to the extensor of the thumb.

d Biceps cubiti.

e Pectoralis.

f Flexor digitorum.

g Flexor carpi radialis.

h Sublimis.

i Profundus.

k The tendon of the extensor ulnaris et digitorum communis.

l A sort of spongy, fatty substance, probably a production of the membrana adiposa.

m Vena cephalica.

n Vena plantaris interna.

o Nervus plantaris internus.

p Interosseus, &c.

q A ligament coming from the interosseus and inserted into the extending tendon.

r The hoof.

two muscles, one superior, the other inferior, for the passage of nerves and blood-vessels to the lower lip; the superior arises tendinous and is inserted fleshy into the lower lip laterally; the inferior arises fleshy, and is inserted tendinous nearer the middle of the lower lip.

12 The elevator of the chin.

13 A nerve going to the alae narium.

14 Vena angularis which is a branch of the vena jugularis externa anterior.

15 Arteria angularis.

16 A branch of the vena temporalis.

17 17 Two valves, in a branch of the jugular vein.

18 Branches of the nervus maxillaris inferior. They are branches of the third branch of the fifth pair of nerves.

19 The salivary duct.

20 The anterior cartilage of the outer ear.

21 The outer ear.

22 23 A muscle arising from the anterior cartilage at 23, and inserted at 23 into the outer ear.

24 A muscle which arises by two fleshy heads from the internal surface of the anterior cartilage, and is inserted into the lower convex part of the external ear near the root, nearer the posterior edge than the anterior. It assists the posterior part of the retrahens in action.

25 A muscle which is a sort of antagonist to that marked 24, it arises from the ridge of the occiput under the retrahens, and is inserted into the ear at 25. It helps to turn the opening of the ear forwards.

26 26 26 c The parotid gland.

In the Neck.

a b c Sterno mastoideus, or sterno maxillaris; it arises from the top of the sternum at *b*, and is inserted by a flat tendon into the lower jaw bone, under the parotid gland at *a*, or near *c*, is likewise inserted into the root of the processus mastoideus by a flat tendon.

d The spongy fatty substance of the mane cut directly down the middle, and the left side remaining on to show its thickness.

e Ligamentum colli.

ff Caracohyoidaeus; it arises from the upper and internal side of the humerus, betwixt the insertions of the subscapularis and teres major by a flat membranous tendon; it begins to be fleshy as it comes from under the serratus minor anticus, and is inserted into the os hyoides.

g Sternohyoidaeus.

h i Transversalis; *h* the tendinous part; *i* a fleshy part.

k l The tendon of the trachelomastoideus; *l* a fascia or membranous part.

m n Rectus internus major capitis; *m* its longest origin from the transverse process of the fourth vertebra of the neck, and the part *p* of the longest colli, which origin is sometimes continued down almost as low as the lower part of the transverse process of the fifth.

o p q r Inter-transversales minores colli; they run from the transverse process of one vertebra to the transverse process of the next to it.

p q Longus colli.

r s t u v Splenius; *r* the part coming from the origin of this muscle, which is from the expansion common to it, and the serratus minor posticus, &c. It arises tendinous from the ligamentum colli under the rhomboideus, and fleshy about the superior part of the neck.

At *s* it is inserted into or attached to the transversalis; at *t* to the tendon of the trachelomastoideus; *u* the part which goes to be inserted into the occiput. It is also inserted into the transverse processes of the fifth, fourth, and third vertebrae of the neck, by flat, strong tendons which run on the internal side of the muscle; it is externally fleshy within a minute or two of these insertions.

x Sternothyroidaeus.

y Hyothyroidaeus.

z Cricothyroidaeus.

g The lower constrictor of the pharynx.

11 Vena jugularis communis.

2 Vena jugularis externa anterior.

3 Vena jugularis externa, posterior, or superior.

4 Part of the carotid artery, or carotis communis.

5 Glandulae clavicularae, or axillares (in this animal, as there are no clavicles) or cervicales inferiores or thoracicae superiores lymphaticae. They are lymphatic glands.

6 6 6 Branches of the cervical nerves accompanied with arteries which are distributed to the musculus levator humeri proprius, &c. and integuments.

7 Branches of the cervical arteries and veins coming out of the apophysis to go to the trapezius and integuments.

Muscles, &c. in the internal View of the left lower Limb, as they appear through or protuberate under the fasciae which cover them.

a The fleshy part of the tibialis anticus.

b The fleshy part of the sartorius.

c The tendon of the extensor digitorum pedis.

d A ligament coming from the interosseus, and joining with the tendon of the extensor digitorum pedis.

e The interosseus, &c. arising from the upper part of the metatarsal bones and some of the tarsal bones, and is inserted into the sesamoid bones, and first bone of the toe on each side, and sends off the part *d* to the tendon of the extensor digitorum pedis.

ff The tendon of the plantaris.

g A tendon formed by the semi-tendinosus, biceps cruris, &c. to go to the heel.

Between *f g* and *h* are formed, by the expansions of the muscles on the inside of the thigh, two or three flat tendons like those marked *p* on the external side of the leg in this table.

The direction of the tendinous fibres of the fascia are here marked as they run over the inside of the leg, &c. about *h* they are pretty strong (under which the vena saphena is scarcely discernible) forming a strong tendinous fascia, which joins in with the tendon of the extensor digitorum pedis at *k*.

l A sort of fatty, spongy, glandular substance, lying immediately under the skin, probably a production of the membrana adiposa lying over the protuberating part of this joint to preserve the bending tendons from bruises when the fetlock touches the ground.

m Vena saphena.

n Branches of the vena saphena.

o Vena plantaris interna, or a continuation of the vena saphena.

p Nervus plantaris internus.

q A branch of the nervus cruralis.

r The hoof.

THE SECOND ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE EXPLAINED.

In the Head.

a b c d The lateral dilator of the nostril and upper lip, *b e* its insertion into the upper lip and nostril; *d* its origin.

f The anterior dilator of the nostril.

g h i k The orbicular muscle of the mouth; *g* the part belonging to the lower lip; *h* the corner of the mouth; *i* the part belonging to the upper lip; *k* fibres which tend upwards to the insertion of the nasal muscles of the upper lip.

l m n o The long nasal muscle of the upper lip; *l m* a fleshy part; *n* its origin; at *n* the tendon begins; *o* the tendon.

p q r The masseter.

r s t Buccinator.

s t The broad ligaments of the eye-lids, which are membranous elongations formed by the union of the pericorium of the orbits, and pericorium along both edges of each orbit.

u v w The ciliaris muscle; *w* its origin.

x y z A muscle belonging, in part, to the alae narium *z*, but chiefly to the concha narium inferior; *x* its insertion into the alae narium; *y* its origin, by a small tendon from the bone along the nasal muscle of the upper lip; below *z* it passes under the alae narium to the inside of the nostril, and is there inserted into the concha narium inferior.

z Alae narium.

g Septum narium.

223 The temporal muscle; 3 its insertion into the coronary process of the under jaw bone.

44 Muscular fibres which extend and draw outwards the pituitary membrane 5.

5 Membrana pituitaria.

6 7 7 A muscle called caninus, or elevator of the corner of the mouth, arising from the upper jaw bone under the muscle *z y*, and inserted at 7 7 into the buccinator.

9 10 The depressor of the lower lip; it arises along with the buccinator, and is almost divided into

Muscles in the Neck and Trunk, which are inserted into the Scapula.

a a b Rhomboideus; *a a* the origin from the ligamentum colli; it has another origin from the superior spines of the vertebrae of the back; *b* its insertion, or the part going to be inserted into the scapula.

c d e f Serratus minor anticus; *c d* the fleshy part arising near *c* from the sternum, and part of the first rib, and from the cartilaginous endings of the second, third, and fourth ribs, near their joining to the sternum; and is inserted into the superior costae near the basis scapulae and tendinous surface of the supra-spinatus; and is connected to the teres minor by the fascia *e f* which is sent from this muscle over the infra-spinatus scapulae and supra-spinatus scapulae to its outer edge.

Its flat tendon may be separated some part of the way to the basis and spine of the scapula from the tendinous surface of the supra-spinatus scapulae.

g h i k l m n Serratus major anticus; *g* part of its insertion on the external part of the scapula; the rest of its insertion possesses about one half of the internal part of the scapula; *h* the part which arises from the transverse process of the third vertebra of the neck; *i* that from the fourth; *k* that from the fifth; *l* that from the sixth; *o* its origin from the seventh rib; *p* from the eighth.

This muscle arises from the six superior ribs, also within about five minutes of the cartilages. It does not adhere to the intercostals as it passes over them; but at the extremity of its origin sends off a membranous tendon over the intercostals, towards the sternum; it arises all the way, from its first beginning, from the external surface of the ribs up to the insertion of the tendons of the sacro lumbalis.

Muscles, &c. inserted into the humerus and cubit.

11 2 3 4 5 5 5 5 Pectoralis; 11 its origin from the linea alba abdominis; 12 its origin from the lower part of the sternum; 3 its origin from the superior part of the sternum; the part 3 4 which is the superior part of this muscle, sends a flat membranous tendon in betwixt the biceps and levator humeri proprius; to which it is joined before its insertion into the humerus; 5 5 5 the flat tendon cut off at 5 5; the external part below this runs down the cubit.

a b c d e f Supra-spinatus scapulae; it continues its origin from the scapula from *a* to about *b*, and is inserted at *c* into the head of the os humeri, and capsular ligament on the outside of the origin of the biceps cubiti; and by the other half into the head and capsular ligament of the os humeri, or the inside of the origin of the biceps cubiti; the lower part is covered by a tendinous fascia which runs from the supra-spinatus to the serratus minor anticus, and binds that muscle in its place; it is pretty strong at *d*, but stronger at *e*, below the protuberating part of the humerus; at *e f* a fascia runs over this muscle from the serratus minor anticus to the teres minor.

h i k l m n Infra-spinatus scapulae; from *h* to *i* are marked traces of the superior part of the trapezius insertion on the surface of this muscle, it is attached to it at *i*, but strongly inserted into it near *h*; *h h* marks the insertion of the superior part of the trapezius upon this muscle; *l* the beginning of its origin from the dorsum scapulae, and the cartilage on the border of that bone; *k m* marks of the inferior outline of this muscle, where it is bounded by the teres minor, but not easily distinguished, by reason of the tendinous surface by which they are both covered and attached together; *n* its strongest tendon, by which it is strongly inserted into the protuberating part of the humerus under the tendinous expansion which goes from the teres minor to the lesser anterior saw muscle.

The lines upon this muscle mark the direction of some of the principal fibres of the tendinous covering.

o p q r Teres minor; *o* its origin along with the triceps cubiti; *p* its insertion into the fascia arising from the humerus; *q g* its insertion into the humerus; from *q* to *k* it sends off a fascia that connects it to the serratus minor anticus. The outline is much obscured by the fascia or tendinous covering of part of this muscle and the infra-spinatus with the supra-spinatus, which connects them. *h p* Marks the cutting off of the membranous tendon of the superior part of the trapezius, as *h h* marks it upon the infra-spinatus.

r s t u v Latissimus dorsi; *r s t* its flat tendon; *r r* its origin from the spinal processes of the back; at *r s* this tendon is cut away from its attachment to the fascia lata; and at *r l* it is entirely cut away to uncover the glutei; *t t u v* the fleshy part; *t t* the origin of the carnosus fibres.

r, r u Mark the traces of the inferior part of the trapezius enclosed betwixt the tendon of this muscle, and a tendinous fascia which covers them both together; the said fascia being cut off at *r u* and left on the latissimus dorsi leaves the marks of the trapezius very plain; *t u v* shows the direction of the fibres of the tendinous fascia which connects this part of the muscle to the triceps cubiti; these fibres run over the infra-spinatus towards the insertion of the trapezius *h k*; *u* the fleshy part going to be inserted into the humerus; *v* the aponeurosis which runs towards the obliquus descendens, and seems to be lost upon it, degenerating into a membrane.

IIIIIIKKKLLM Obliquus externus, or descendens abdominis; **IIIIII** the place where the thickest carnosus part ceases to arise from the ribs and begins to run over them without adhering to them or the intercostals; **KKK** the ending or insertion of the carnosus part into the tendinous part; **L** the linea alba or strong broad, aponeurosis, formed by this and the internal oblique muscle; it is like a broad, strong ligament, much resembling that of the neck, forming a sort of rugae which appear on its external surface, running from above downwards; it has a communication with the serratus major anticus by an aponeurosis, which arises from that muscle; its first or superior origin is from the fifth rib, it arises tendinous from the back part of the insertion of the lower part of the serratus muscle into the ribs, and, at its origin receives the insertion of the lower part of the serratus muscle; it arises from the posterior or inferior labrum or edge of the eighth rib, near all the way from **I** to the insertion of one of the indentations of the superior, or lesser, serratus; from the posterior labrum of the ninth, almost as high as where an indentation of the lesser serratus posterioris is inserted in the superior or anterior labrum of the same rib; it also arises from the tenth; and, in this subject, opposite to the insertion of the serratus minor posterior, it arises from all the ribs below that from the part where the indentations of the serratus major posterior are inserted, or a little higher than that more externally, which is the case generally with the three or four last digitations, but most as they are the lowest and runs over the indentations of the saw muscle; these digitations continue their origin from the ribs all the way down to the part marked **IIIIII** and unite with the intercostal muscles in their passage; this muscle has a communication with the latissimus dorsi by an aponeurosis, which is sent over it by that muscle; **I r** marks the cutting away of the tendon of the latissimus dorsi to uncover the glutei, &c., it is inserted into the os ilium and os pubis and to its fellow by the linea alba.

The blood-vessels and nerves which are marked on the thorax are those which were distributed to the parts taken off as the membrana-carnea, &c., and integuments; the nerves come from the nervi dorsales or costales and nervi lumbares; the arteries from the arterie inter-costales inferiores and arterie lumbares; the veins from the vena intercostales and vena lumbares.

In the right upper Limb.

NOP Triepes brachii; **N** the head, which is called extensor longus major; **O** the short head of the triceps, called the extensor brevis; **P** the head called brachialis extensor longus minor. The short head **O** arises from the humerus, the other two from the scapula; its insertion is into the acromion.

QRS Biceps brachii, or carneo radialis; **Q** the belly of the short head; **R** the belly of the long head; **S** the fascia of this muscle, which is sent down upon the muscles on the cubit.

A B C D E F G H A fascia or strong membranous production lying over the extending muscles on the cubit; **A** its origin from the edge of the triceps from the levator humeri proprius, and from the two protuberant parts of the humerus, betwixt which it is extended like a strong ligament, and gives origin to some of the fleshy fibres of the extensor carpi radialis; it is inserted into the radius at **B C H**; at **A** it is inserted into the ligament, and being expanded over all the extending muscles which lie on the cubit, is inserted into the internal side of that bone, all along the bounds of the bending muscles on that side; there lies under it the extensor carpi radialis, of which **d** is the fleshy part; **e f** the tendon; **g** the extensor digitorum communis; **g** what is analogous to the extensors of the thumb.

This fascia is attached to the upper edge of the extensor digitorum communis, and may, perhaps, be properly called a flat tendon, arising common to this muscle, and the extensor carpi radialis, and sending an expansion not only over but also under them, and being attached to the bone on each side down to the carpus, and also to the ligaments that bind down the tendons, running over the carpus, it makes a continued case for them from their originations down to the carpus, confining them steady in their proper places. It communicates with the fascia of the biceps muscle, and with it is inserted into the tendon of the extensor carpi radialis.

I The tendon of the extensor carpi radialis inserted into the metacarpal bone.

J The tendon of the extensor digitorum communis going to its insertion into the coffin bone.

M N O P Q R S T An expansion arising at **o** from the articulating ligament, and at **s** from the olecranon; it receives an addition from the longus minor, and internal protuberance of the humerus, and expansion of the biceps muscle, then descends over the bending muscle down to the ligaments on the carpus, to which it is attached, as well as to the bones of the cubit on each side of the bounds of the bending muscles; the different directions of its fibres being marked as **a g, v, &c.** and its insertion into the bone on the external side as at **P m b**; it then runs into the ligaments. It gives rise to fleshy fibres of the muscle **m**, which is analogous to the extensor minimi digiti, all the way from the out-line **g m b** to the bone where the expansion is inserted. It has a strong insertion at **P** into that protuberant bone of the carpus called the os pisiforme or obiculaire, and another betwixt the tendons **s** of the flexor carpi ulnaris, besides its conjunction with the ligaments on the carpus to which it is a considerable addition; **t** a part of the expansion which appears like a number of small tendons.

adhere to the tendon of the latissimus dorsi, &c. nor fascia lata; **g Q I** the part which receives fleshy fibres from the fascia lata, going under the glutens externus to be inserted into the great trochanter.

I R L S U V W X Y Z 3 4 5 6 7 8 9 11 Biceps cruris; **u v w** mark the superior or anterior head where it arises by carnosus fibres from the fascia lata; its principal origin is from the ligaments which run from the spinal to the transverse processes of the os sacrum, and from thence to the tubercle of the ischium; **v 5 y z** mark the inferior or posterior head, where it arises by carnosus fibres from the fascia lata; its principal origin is from the tubercle of the ischium beginning at the extremity of that tubercle from the inferior angle, and continuing its origin by a flat strong tendon about six minutes along the inferior edge of that bone; this tendon is continued down from the tubercle towards **5** betwixt **y** and **z**, from which, a little above **y**, the fleshy fibres **5 7 I** begin to arise; but the fleshy part **z 7** begins its origin from the tubercle, and continues it down the said tendon; **w 14** the fleshy part of the anterior head where it does not arise from the fascia lata, it is inserted into the patella and superior and anterior part of the tibia; betwixt **p** and **w** are marked tendinous fibres which bind the anterior part of this muscle to the external glutens; and a little below that it is inserted into the thigh bone by a flat tendon, and by this insertion the anterior part of this muscle is kept from starting too much forwards, the fibres of this tendon or ligament running in almost a transverse direction; the part **f 4 4 l** lies under a fascia sent from the anterior part of the posterior head, to the tendon of the musculus fascia lata, which is cut off at **w f**, and on which the direction of its fibres are marked; **x 5 g w 177** the fleshy part of the posterior head where it does not arise from the fascia lata; **i 8 9 3 7 7** the tendon of the posterior head which joins the tendon of the anterior head near the patella, and is likewise inserted at **i 8 8** into the anterior part of the tibia all the way down to the ligament common to the extensor longus digitorum pedis, and tibialis anticus, and into part of the upper edge of that ligament and forms the tendon **11** with the fascia lata (which is cut off at **3 9**) and is inserted into the os calcis; **7 7 3** is the strongest part of the posterior tendon which is inserted into the os calcis.

15 The tendon of the plantaris.

16 17 17 18 19 Semi-tendinosus; **16** its origin from the ligament which runs betwixt the spines of the sacrum and the ischium, from the ligament betwixt the spinal and transverse processes of the os coxeygia; **16 17** marks the part which receives fleshy fibres from the fascia lata; **18** the fleshy part which does not adhere to the fascia lata; **19** the tendinous production which wraps over the gemelli to join in with the fascia lata and tendon of the biceps cruris; the lines **16 17** betwixt this muscle and the biceps mark the fascia lata where it runs in betwixt these muscles; the posterior of the two lines marks the cutting off of the part of the fascia which runs over the semi-tendinosus to the large adductor of the thigh; its principal insertion is by a flat tendon into the superior and anterior part of the tibia internally, it is also attached to the plantaris near the bottom of its fleshy part by a flat tendon or expansion.

22 The large adductor of the thigh.

24 25 25 26 27 30 31 32 33 34 Ligaments which bind down the tendons, &c. on the tarsus, the inferior and anterior part of the leg or tibia, and the superior part of the metatarsus laterally and anteriorly; **24 25 25** a strong ligament common to the tendon of the extensor longus digitorum pedis and tibialis anticus; at **24** it falls off to be very thin, but continues to receive some origin of tendinous fibres from the tibia for some way upwards, which run internally till they are lost in the tendinous expansion of the biceps muscle, &c. which is inserted into the upper internal edge of this ligament pretty strongly, but falls away little or nothing in its way towards the external lateral part of this ligament; from **24** downwards this ligament strengthens as it descends towards **25 25**, where it is thick and strong; its origin on the external lateral part of the tibia is marked **25 33**; there is another strong ligament marked **26** proper to the tendon of the extensor longus digitorum pedis, which shows itself under the common membranous ligament **27** which covers it, and the articular ligament as well as blood vessels, &c. upon the tarsus, and is attached to the ligament **24 25 25**; at **25 25**; at **30** are marked the directions of tendinous fibres, in this ligament, which arise from the bones of the tarsus and descend obliquely inwards and downwards; **31** marks fibres arising from the splint bone, or a bone of the metatarsus, and running transversely over the superior part of the metatarsus joins in with the part **30**; it is inserted into the superior and anterior part of the metatarsal bone; **34** marks some little appearance, by protuberance, of a ligament common to the tendon **37**, and the blood-vessels marked **14**; **32** marks a ligament proper to the said tendon **37**, its origin and insertion being both from the tibia.

35 A ligament which binds down the tendons of the flexors.

36 36 Extensor longus digitorum pedis.

37 37 Peroneus anticus.

38 Flexor digitorum pedis.

39 A branch of the arteria tibialis anterior.

40 Plantaris.

41 Flexor digitorum pedis.

42 40 Vena plantaris externa.

At **z** a ligament arises which joins the tendon **m** near **w**, and goes along with it to be inserted into the great pastern.

A slender ligament arises about **P** which covers the tendon **m** and then runs betwixt it and the tendon **i** to be inserted into the upper and anterior part of the great pastern.

A P P x w z y z Ligaments which bind down the tendons lying upon the carpus.

10 A h y w A ligament whose fibres run in a transverse direction over the anterior part of the carpus to which the carnosus membrana adheres at **x**; at **16** the ligament **h y y** **16** adheres to the bursal ligament; **x w** the insertions of the articular ligament; betwixt **e** and **h** is a ligament proper to the extensor digitorum communis, inserted at two protuberant parts of the radius, one on each side the channel in which the tendon lies; **p z** is a ligament, the fibres of which run in the upper part transverse, in the lower rather obliquely downwards, it lies on the lateral or external part of the carpus, it was covered in table the first by the production of the membrana carnea, and pectoralis, but rather the membrana carnea, as it lies on the external part.

12 A ligament arising at **1** and inserted at **2 w**; it helps to bind down the projecting bone of the carpus, and serves as a stay to it when the flexor carpi ulnaris is in action; there is a large vein protuberating under it.

3 A ligament which helps to bind down the tendons of the anlimis and profundus.

4 The tendon of the profundus.

5 The tendon of the sublimis.

6 A vein arising from under the hoof called vena plantaris externa.

7 Nervus plantaris externus.

9 An articular ligament.

10 A ligament sent from the interosseous and inserted into the tendon of the extensor digitorum communis, which it binds down.

11 12 The horny part of the hoof; **11** the superior part; **12** the sole, or inferior part going under the coffin bone.

13 A substance resembling the villous surface of a mushroom arising from the coffin bone, received by the like arising from the hoof, which it mutually receives.

In the right lower Limb.

a b c d d d e f g g h i k l Musculus fascia lata; **a** its origin from the ilium; **b** its anterior fleshy belly; **D** the posterior fleshy belly, over which the fascia lata sends a strong membrane, as well as under, so that it is received or contained in a duplicature of the fascia lata; the fibres **d d d D e** arising from the superior or external fascia, and descending to be inserted into the inferior or its external side; the part **a b c** arises from the spine of the os ilium internally tendinous; fleshy fibres arising from that flat internal tendon, and descending to be inserted chiefly into the inside of the fascia in the angle **d e g**; the fleshy part in the superior angle **d** being thickest it gradually diminishes till it is lost in the line **g g**; the dark colour of the fleshy fibres makes some appearance in this angle though the fascia is very strong, but not near so much as the part **a b g** because the covering of that is little more than a common membrane; the line **e** marks the place where the fascia lata is cut off before it passes betwixt this muscle and the glutens externus to be inserted into the anterior costs of the os ilium; **d e** marks the place where the production of the fascia lata, which is sent over this muscle, is cut off; and **d d d** the place where it joins to the broad tendon of this muscle in which place it is cut off; **e f** shows the place where the fascia lata is cut from its conjunction with what may be called the broad tendon of this muscle; **f g** marks the place where the fascia lata ceases to adhere to the tendon of this muscle, in order to pass down over the leg and foot; at **h** the tendinous surface of the rectus cruris makes its appearance through the tendon of this muscle; **i k** shows the tendon or ligament which binds the patella to the tibia protuberating; **l** the ligament which binds the patella to the external protuberance of the os femoris.

This muscle is inserted, by a strong tendon, into the tibia at **i**, adhering to the tendon of the anterior and middle part of the biceps muscle in its way; its adhesion is all the way from **i** to the superior **4** where it has a little insertion into the patella.

m n o p Glutens externus; **m** a fleshy origin from the ligament which runs betwixt the spinal and transverse processes of the os sacrum; **n** the place where the fascia lata is cut off from the production which it sends under this muscle, or from its attachment to the tendinous surface of the internal part of this muscle, which arises from the ligament running betwixt the os sacrum and ischium; and which receives first the insertion of those fleshy fibres which arise betwixt it and the ends of the spinal processes of the os sacrum from the same ligament, and then the fibres **m n o**, which arise from the fascia lata and descend obliquely inwards and downwards to be inserted into it; **o** the place where this muscle ceases to arise from the fascia lata and goes to be inserted at **p** into the lateral protuberance of the thigh bone; it sends off a fascia over the posterior part of the thigh bone, which runs in a transverse direction, and into which the pyramidalis is inserted, or joins in with it before its insertion into the superior or rather posterior part of this protuberance.

Q R s t Glutens medius; **q r s** its origin from the tendinous surface of the sacro lumbalis; **s** its origin from the ilium; **Q** the part which is covered by its own proper membrane, and does not

43 Nervus plantaris externus.

44 The interosseous, &c.

45 A ligament sent from the interosseous, &c. by which the tendon of the extensor longus digitorum pedis is bound down, otherwise it would start from the bone when the fetlock joint gives much way.

47 48 The horny part of the hoof; **47** the superior part; **48** the sole, or inferior part going under the coffin bone.

49 A substance resembling the villous surface of a mushroom arising from the coffin bone, received by the like arising from the hoof, which it mutually receives.

In the internal Side of the left lower Limb.

a The tendon of the rectus cruris.

b Vastus internus.

c d Sartorius.

e f Gracilis.

g h i l Semi-tendinosus; **g** the fleshy part; **h i l** the tendon which is inserted into the tibia at **l**; at **i** it sends off a tendon to the gemelli, to which, at **o**, the fascia are attached.

m n m Gemelli; **m** a fleshy part; under **n** lies the tendon over which the tendon of the plantaris is twisted.

n A tendon formed by that going off from the semi-tendinosus at **i**, and by another tendinous fascia.

o p q r s The fascia which are inserted into the os calcis gemelli and plantaris; **o** the place where the fascia lata is cut off; **p** the part going to be inserted into the os calcis on the external side; the part **q** joins with the part **p** to be inserted into the os calcis at **s**.

t u v w x The tendon of the plantaris coming from under the fascias and twisting over the gemelli at **t**; **w** a part which it sends off to the os calcis, which makes a sort of ligament to bind in the tendon of the flexor digitorum pedis; it is spread a little upon the ligament **6 9 9** and inserted into it near its origin from the os calcis about **8**.

y The tendon of the flexor digitorum pedis lying under the thin ligament marked **35** on the right leg in this table; the bounds of it are here marked though it falls off gradually into nothing more than a common membrane, and is insensibly lost as it descends from about **y**; the lowest part of its insertion into the splint bone is about **y**, but is here hid by the blood-vessel.

z 1 The tibialis anticus appearing under the fascia.

2 3 3 The ligament marked **24 25 25 33 36** in this table of the right leg; **3 3** its insertion into the tibia.

4 The ligament marked **30** on the right lower limb in this table.

5 A ligament which covers the tendon of the tibialis posterior arising from the posterior and inferior part, or internal inferior angle, and inserting itself into the articular ligament **6 9 9**.

6 6 7 A ligament arising at **7** from the astragalus, and inserted at **6 6** into a cartilage lying under the tendon of the flexor digitorum pedis, which, assisted by another ligament on the other side the limb, confines it in its place. These ligaments seem to be a part of the fascia which covers the muscles on the external side of the limb, which (passing under the tendon of the flexor digitorum pedis) forms a cartilaginous substance as it passes and is a smooth prepared bed for that tendon to slide upon.

8 9 9 A strong ligament which binds the os calcis to the astragalus, os naviculare, ossa cuneiformia, and splint-bone, arising from a protuberance about **8**, and inserted into the other bones of the tarsus and metatarsus about **9 9**.

9 9 The articular ligament which binds the tibia to the bones of the tarsus.

10 11 A ligament running over the tendon of the plantaris, inserted into the ligament **8 9 9**, and splint-bone. It is marked **85** on the right leg in this table.

12 12 12 A sort of ligamentous fascia betwixt which and the bursal ligament the mucilaginous glands are contained.

13 The ligament proper to the tendon of the extensor longus digitorum pedis, marked **26** in the right limb in this table.

14 15 16 17 The tendon of the extensor digitorum, at **14** going to be inserted into the last bone of the toe, or coffin bone; it receives the ligament **19** at the part **16**, and the ligament **20** at the part **17**; and, in its passage down the toe, it adheres to the bursal ligaments under **21** and **20**. It is marked **5** in table the first.

18 Interosses, &c.

19 The ligament marked **d** in table the first. It arises from the interosseous, &c. and is inserted into the tendon of the extensor longus digitorum pedis, and binds it down.

20 A ligament which arises from the internal-lateral and inferior part of the first bone of the toe, and is inserted into the tendon of the flexor digitorum pedis, and binds it to this side, as **48** on the right lower limb, both the same tendon to the other side.

21 Vena sapheena.

22 Nervus sciaticus internus.

23 Nervus plantaris internus.

- 24 Vena plantaris interna.
25 The horny part of the hoof; 26 the superior part; 26 the sole or inferior part going under the coffin bone.
27 A substance resembling the villous surface of a mushroom arising from the coffin bone, received by the like arising from the hoof, which it mutually receives.

In the left upper Limb.

- c Part of the biceps which sends an expansion over the bending muscles lying upon the cubit.
def The expansion marked m n o p q r s t on the left upper limb in this table.
g g The fascia marked a b c d e f g h on the left upper limb in this table.
h The tendon of the muscle which is analogous to the extending muscles of the thumb, marked g on the right upper limb in this table.
i k l m The ligament marked 16 h k y m on the left upper limb in this table: the articular ligament appears under this; from h to i this ligament communicates with the fascia d e f.
n o A ligament arising at n, and inserted, about o, like the ligament marked 12 on the right upper limb in this table.
p The ligament marked 3 on the right upper limb in this table. It is a continuation of the ligaments marked n o on the right, and 12 on the left upper limb in this table, it is here something thinner than the ligaments n o and 12, but as it descends down the limb is soon insensibly lost in a membrane.
q The tendon of the profundus.
r The tendon of the sublimis.
s A vein arising from under the hoof, called vena plantaris interna.
t Nervus plantaris internus.
u s The tendon of the extensor digitorum communis; u the part which is sent off from the principal tendon to be inserted into the superior and internal part of the great pastern; s the principal tendon inserted into the coffin bone, but in its way is attached to the coronary bone on its anterior and superior part.
y A ligament which arises from the interosseus, &c. and is inserted into the tendon of the extensor digitorum communis, which it binds down.
z The interosseus, &c.
1 2 The horny part of the hoof; 1 the superior part; 2 the sole or inferior part going under the coffin bone.
3 A substance resembling the villous surface of a mushroom arising from the hoof, received by the like arising from the coffin bone, which it mutually receives.

THE THIRD ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS AND CARTILAGES OF A HORSE EXPLAINED.

In the Head.

- a b The elevator of the upper eye-lid, so thin and transparent that the dark coloured part appears through at a, and the white at b.
c The lachrymal gland.
d The under eye-lid.
e e The tarsi ligamentum ciliare, or ciliary edges.
f Alae narium.
g h i i A muscle arising by a small tendon at h, and by a flat membranous tendon at i; it is inserted near g into the pituitary membrane which covers the cochlea narium inferior: it has another insertion into the alae narium.
k The septum narium.
m n Caninus or elevator of the corner of the mouth; m n its insertion from the corner of the mouth along the buccinator.
o o Orbicularis oris.
p q r The depressor of the lower lip.
s s Buccinator.
t The anterior dilator of the nostril.
u The elevator of the chin.
v The masseter.

G

23

transverse process to the top of the spinal process of the same vertebra, and makes a communication betwixt this part of the muscle and that arising from the third, fourth, fifth, sixth and seventh spinal processes.

- U U Obliquus capitis inferior.
W W Obliquus capitis superior.
X X Longus colli.
1 1 1 1 2 2 2 2 Branches of the cervical arteries and veins.
3 Part of the jugular vein.

Muscles on the Shoulder.

- a b The subscapularis, which is outwardly tendinous; at a is marked a membranous tendon, from which the supra-spinatus receives some part of its origin; b marks a tendinous slip sent from this muscle which leaves it about a, and is inserted into the caracoid process a little below b.
c d e f g h Triceps extensor cubiti; c d e e the head, which is called extensor longus major, arising at e e from the inferior costa scapulae; c marks the traces of the teres minor; at d are left some strong tendinous threads belonging to the infra-spinatus scapulae which adhere to this muscle; the marks of the infra-spinatus appear all the way from d to the humerus; f the origin of that part called extensor brevis from the humerus; g the head called brachialis externus longus minor.
i k l m Biceps brachii, or rather caraco radialis; i i the tendon arising from the scapula; k a fleshy part lying upon the tendon; l the belly of the long head; m the belly of the short head; n the aponeurosis arising from this muscle, which it sends to the tendinous fascia or covering of the cubit.
o Nervus cubitalis.
p Nervus radialis.
q Nervus musculi cutaneus.
r Nervus medianus.
s Branches of the arteria and vena axillaris.
t A branch from the arteria axillaris.

In the Throat.

- a b b b c d Serratus minor posticus; a e the beginning of its fleshy fibres; b b b the flat tendons by which it is inserted into the ribs; a e c the fleshy part; d the flat tendon by which it arises. In this subject this muscle runs fleshy under the serratus major posticus, and is inserted into the twelfth, thirteenth, and fourteenth ribs. Its first or superior insertion is into the fifth rib.
e f g h h, &c. Serratus major posticus; e f g its broad tendon; from g to f is marked the place where the tendon of the latissimus dorsi is cut off from its insertion with this tendon into the fascia lata; e h h, &c. the fleshy part; e e the beginning of the fleshy part; h its insertion into the ribs which in some subjects is only into seven inferior ribs, as in this subject, though, as here, it is more frequently inserted into eight.
i Serratus major anticus.
m m, &c. n n o o, &c. p p, &c. q q, &c. r r, &c. Intercostals; h m i mark the origin of the external oblique muscle from the ribs, where they are described by broken lines; the same kind of line marks also where they unite with the intercostals, or arise from the tendinous covering of the intercostals; o o, &c. mark the parts of the external oblique muscle which are above and below the insertion and adhesion of the external oblique muscle; p p, &c. some appearances of the internal intercostals: out of these places come nerves and blood-vessels which go to the external oblique muscle; q q, &c. some fleshy fibres which arise partly externally tendinous but chiefly fleshy, and run in a transverse direction from one rib to another. They belong to the internal intercostals. r r, &c. fleshy fibres which run in the same direction of the external intercostals from one cartilaginous ending of the ribs to another. Betwixt most of the ribs there are marked blood-vessels and nerves, some of which go to the external oblique muscle, they are called intercostals.
s s u u w w y Obliquus internus, or ascendens abdominis. It arises at s s from the spine of the ilium tendinous and fleshy, its origin is continued to the ligamentum fallopii, from which it arises, and from the symphysis of the os pubis: it is inserted into the cartilage of the lowest rib tendinous and fleshy, and into the cartilaginous endings of the ribs as far as the cartilago ensiformis; s s t u u the fleshy part ending at u u: the nerves and blood-vessels which are seen on this part of the muscle pass to and from the external oblique muscle and parts which are taken off; s y the flat tendon; that part of the tendon which runs over the rectus is cut off from t to y.
z Rectus abdominis: it arises from the os pubis, and is inserted into the cartilago ensiformis and into the cartilages of the third, fourth, fifth, sixth, seventh, eighth, and ninth ribs, and into the sternum betwixt the cartilages of the third and fourth ribs; there are fleshy fibres arising from the first rib which join it at its origin from the sternum. This is called a distinct muscle and named musculus in summo thorace fuit.
The blood vessels and nerves which are marked on the thorax are those which were distributed to the parts taken off, as the obliquus externus, latissimus dorsi, membrana carnosus, &c. and integuments; the nerves come from the nervi dorsales or costales, and nervi lumbares; the arteries from the

- 1 Vena jugularis externa, posterior or superior; in a branch of which at
2 2 Are two valves, anastomosing between the anterior and posterior external branches of the jugularis.
3 Vena temporalis.
4 Vena angularis.
5 Arteria angularis.
6 7 8 Nervus maxillaris superioris; the second branch of the fifth pair of nerves; 7 branches going to the upper lip; 8 a branch which goes to the long nasal muscle of the upper lip.
9 Branches of the nervus maxillaris inferioris; they are branches of the third branch of the fifth pair of nerves; they communicate with the nervus maxillaris superioris.
10 Glandulae labiales, part of which are cut away to show something of the spreading of the nerves of the lip.
11 The salivary duct.
12 The anterior cartilage of the outer ear.
13 The outer ear.

In the Neck.

- a b c d e Caracohyoidens; b the part coming from its origin at the upper and internal side of the humerus, betwixt the insertions of the sub-scapularis and teres major, by a flat membranous tendon, beginning to be fleshy as it comes from under the serratus minor anticus; c fibres which run towards the angle d, attached to the rectus anticus major, and having an origin by a flat tendon along with the insertion of that muscle from the os sphenoides; a fibres which intersect the wind-pipe, going from the part c d towards e, to be inserted into the os hyoides.
f g Sternohyoidens arises at f from the middle tendon of the sternohyoidens, and goes, at g, along with the caracohyoidens to be inserted into the os hyoides.
h i k Sternothyroidens; h its middle tendon; i the fleshy part coming from its origin at the superior and internal part of the sternum, it runs close along with its fellow a little higher than the part h, where it is tendinous, from whence it goes to be inserted at k into the thyroid cartilage about 3 minutes from its fellow.
l Part of the carotid artery: at l goes off a branch to the sternothyroidens.
m Nerves of the eighth pair.
n The thyroid gland.
o o o o Glandulae lymphaticae.
q The lower constrictor of the pharynx.
r Hyothroidens.
s Crithyroidens.
t Cricarytenoidens posticus.
u The inferior maxillary gland.
w x y Rectus internus major capitis, or rectus anticus longus; w its origin from the transverse process of the third vertebra of the neck; x its origin from the transverse process of the fourth vertebra, and a part of the scalenus. It is inserted into the os sphenoides.
A B C D E F G H Transversalis cervicis; A B the superior part, which arises from the third, fourth, fifth, sixth, and seventh oblique processes of the neck, and two uppermost of the back, viz. the lower oblique process of the third, and upper oblique process of the fourth, and so of the rest: it is inserted into the transverse process of the first vertebra of the neck. C D E F G H the inferior part which arises from the transverse processes of eight of the superior vertebrae of the neck, and is inserted into the transverse processes of the four inferior vertebrae of the neck, partly back, and chiefly by broad thin tendons, as at D E F G H. Between the superior part A B and D fleshy, but chiefly by broad thin tendons, as at D E F G H. Between the superior part A B and D the inter-transversales appear. At the extremity of its origin it is spread out about three inches by a flat tendon expanded from its first origin, from the eighth transverse process, to the broad tendon of the complexus to which it is strongly attached, and from the whole breadth of which fleshy fibres arise.
I K L Trachelo-mastoidens, complexus minor, or mastoidens lateralis; I the tendon, going to be inserted into the root of the processus mastoideus; K L the fleshy part arising from the oblique processes of the third, fourth, fifth, sixth, and seventh vertebrae of the neck, the uppermost of the back, and transverse processes of the second and third vertebrae of the neck.
M O P P P Q S T Complexus; M shows some external appearance of the principal tendon towards which the fleshy fibres are directed as marked P P, &c. O O tendinous lines by which the caracous fibres P P, &c. are intersected; Q a tendinous origin from the ligamentum colli; S the part going to be inserted by a strong round tendon into the occiput near the insertion of its fellow; at T are marked the directions of some tendinous threads which attach it to the ligamentum colli.
It begins its origin from the upper oblique process of the third vertebra of the neck and continues its origin from all the oblique processes of the neck below that, and from the upper oblique process of the first vertebra of the back, and, by a pretty strong flat tendon, from the transverse process of the second and third vertebrae of the back, from the last of which the tendon is reflected from the

24

arteriae intercostales inferiores, and the arteriae lumbares, the veins from the vena intercostales and vena lumbares.

In the Cubit and right upper Extremity.

- a b c d d Extensor carpi radialis; a its origin from the superior protuberant part of the humerus; b the part which arises fleshy from the fascia which is extended betwixt the two external protuberant parts of the os humeri; it arises above the part b and ligament or fascia from the external ridge of the external condyle all the way up as far as the brachialis internus does not cover, but its most considerable origin is from the anterior part of the external condyle of the os humeri, from which place it continues its origin into the great cavity on the anterior and inferior part of the os humeri; from whence it arises by a very strong tendon firmly adhering to the tendon of the extensor digitorum communis; a b c the fleshy part; d d the tendon inserted into the metacarpal bone, at d adhering to the dorsal ligament a little before it reaches the lower bone of the carpus, or about three minutes from its insertion into the metacarpal bone; e marks the place where the fascia, proper to the extending muscles on the cubit, is cut off from the fascia of the biceps muscle a c, which it joins to be inserted along with it into the tendon of the extensor carpi radialis.
The origin of this muscle is as extensive as the originations of the long supinator and radialis longus and brevis, and may be called a combination of all three in one, which is assisted by the biceps, the fascia of which is like a strong flat tendon, inserted into the tendon of this muscle.
f The muscle which is analogous to the extensors of the thumb in the human body; f the fleshy part arising from the lateral part and ridge of the radius; g the tendon going to be inserted into the false metacarpal bone or lost in the ligament inserted into that bone, or rather attached to it before its insertion. It is a combination of the abductor pollicis manus, extensor longus, and extensor brevis pollicis manus and indicator.
h i k l m Extensor digitorum communis; h its origin from the external condyle of the humerus; i the origin it receives from the fascia which is extended betwixt the two external protuberant parts of the os humeri; it is a strong membranous tendon; h i its origin from the upper and lateral part of the radius; k the fleshy belly; m n the tendon; n the part inserted into the coffin bone; n the tendon which it sends off to the tendon of the extensor minimi digiti. Its principal origin is by a flat strong tendon from the lateral anterior and lower part of the os humeri, from the cavity above the articulation under the extensor carpi radialis, to the tendon of which it adheres for about three minutes from its beginning, as well as to the dorsal ligament which lies under it.
o o o Ligamentous fascias.
p p p Extensor minimi digiti; p the part arising from the superior part of the radius. It has an origin from the ulna. The part marked with broken lines from p to g receives a fleshy beginning from the vagina or case which binds together the bending muscles on the cubit. r s Its tendon which is joined by the slip from the extensor digitorum communis m, to be inserted at s into the first bone of the finger.
t u w x y Flexor carpi ulnaris; t the origin of its external head from the external protuberance of the os humeri posteriorly; u the internal head which arises from the internal protuberance of the os humeri; it is inserted into the external false metacarpal bone a little below w, and at x into the pisiform bone; y the tendon; z the fleshy parts.
1 2 3 The profundus arises by four distinct heads, 3 is the common tendon of the four heads; the head 1 arises from the internal protuberance of the os humeri posteriorly under, and in common with the sublimis, with which it seems to be confounded, in some degree, all the way down the fleshy part till it comes to the tendon where the four heads unite, and then the profundus and sublimis make two distinct tendons; the next head arises under that from the same protuberance by a small flatish tendon, it soon swells into a round fleshy belly, then gradually tapering becomes a round tendon, joins in with the tendon of the first described head a little above the projecting pisiform bone of the carpus; the next head, marked 2, arises fleshy from the ancon near its extremity and soon becoming a small long tendon joins in as the former; the fourth head arises fleshy from the flat posterior part of the radius about its middle, and first becoming tendinous joins in with the other heads about the same place.
There is a strong tendinous ligament arising from the projecting pisiform bone, and another of the carpal bones inserted into the tendon of the profundus; it arises from all the internal face of the carpus: there is such a ligament arising from the internal edge of the radius, which is inserted into the sublimis about the same place, where the four tendons of the profundus unite.
5 Interosseus, &c.
6 A ligament from the interosseus to the tendon of the extensor digitorum communis.
8 8 The dorsal ligament belonging to the anterior part of this joint.
9 The articular ligament.
10 The tendon of the sublimis.
11 Nervus plantaris externus.
12 Vena plantaris externa.

13 The villous covering of the coffin bone is here left on to shew its thickness.

In the right lower Limb.

a a b b b b d d Gluteus medius; *a a* its origin from the sacro-lumbalis; *b b b b* an origin from the fascia lata; *a* an origin from the ilium; below *b b b* it is covered by the gluteus externus and biceps cruris; *d d* its insertion into the great trochanter. Its origin is continued from *c* to the posterior part of the spine, and all that space of the ilium which lies betwixt the spine and the gluteus internus partly tendinous but chiefly fleshy, and from the ligament which goes betwixt the ilium and the transverse processes of the os sacrum.

e Iliacus internus arises fleshy from all the internal cavity of the os ilium and inside of its anterior spine; it is joined by the psoas magnus and with it inserted into the lesser trochanter. They seem, to me, to be but one muscle.

f Large arteries and veins which go to the musculus membranaceus, and in betwixt the rectus and vastus externus. They are part of the first ramus of the pudicæ communis.

g h i k Rectus cruris; *g* the part coming from its origin from the external or posterior part of the inferior spine of the ilium by one tendon, and by another from the anterior part of the same spine; *h* its fleshy belly; *k* its insertion into the patella.

n o p q r r s Vastus externus; *o* its origin from the posterior part of the great trochanter; *p* an origin from the anterior side; they are both externally tendinous; *r r* its insertion into the patella; *s* its insertion into the lateral ligament of the patella; *n* its principal fleshy part; *q* the thin fleshy part which goes to the lateral ligament, and over which the anterior part of the biceps goes to be inserted into the patella, at *r r s*.

r r u v w The insertions of the anterior part of the biceps; *r r u* that into the patella; *v* that into the tibia.

y z The inferior ligament of the patella, inserted at *y* into the patella, and at *z* into the tibia.

12 The lateral ligament of the patella, inserted at 1 into the patella, and at 2 into the os femoris.

34 The bursal or capsular ligament of the knee.

5 The place where the tendon of the gluteus externus is cut off from its insertion.

6 The place where the expansion is cut off which it sends to the pyramidalis.

8888 The ligament which runs from the spinal to the transverse processes of the os sacrum, upon which is marked the fleshy origin of the biceps.

88910 The ligament which runs from the transverse processes of the os sacrum to the ischium, on which is marked the fleshy origin of the biceps cruris.

89 Shows the place where the fascia lata is cut off betwixt the biceps and semi-tendinosus.

9911 The origin of the biceps from the tubercle of the ischium; 99 that from the end; 911 that from the inferior edge, where there is a little of the flat tendon left on to shew its breadth.

1213141516 Blood-vessels; 12 an artery; 13 a vein, the branches of which, 15 and 16, run to the semi-tendinosus, the branches 14 to the biceps. The artery is a branch of the first ramus of the pudicæ communis, which is a branch of the internal iliac or hypogastric; the vein is a branch of the vena hypogastrica.

18 Blood-vessels which go to the semi-tendinosus; the superior is an artery, the other a vein.

1920212223242530 Extensor longus digitorum pedis; 19 an origin from, or an attachment to, the tibia; 20 its origin from the femoris along with the tendon of the tibialis anticus inseparably joined to that strong tendon; 22232425 its tendon running under the ligament 26; 21 its fleshy belly; at 22 it is joined by the tendon of the peroneus; at 23 it is joined by a ligament from the interosseus, &c. which binds it down to the great pastern; the principal part of the tendon 24 goes to be inserted into the coffin bone, where it is joined by the tendon of the peroneus; it sends off a slip to be inserted into the first bone of the toe or great pastern at 30.

26 A ligament which binds down the tendon of the extensor longus digitorum pedis.

27 Extensor brevis digitorum pedis.

2829 The tibialis anticus; 28 its origin from the superior and anterior part of the tibia; it arises also by a very strong tendon from the inferior part of the os femoris, and is inserted into the bones of the tarsus and metatarsus. It is more fully explained in table the eighth.

31313233 Semi-membranous arising tendinous, and at its origin attached to the origin of the biceps at 3131; at 33 it is joined in with the semi-tendinosus, and is with it inserted into the tibia.

3435 The inferior part of the semi-tendinosus cut off at 34; at 35 it sends off an expansion attached to the tendinous ligament which lies over the gemelli, and covers some blood-vessels and nerves which pass over the gemelli, and run down the leg; it is also inserted by a flat tendon or expansion into the plantaris near the bottom of the fleshy part, through which expansion there is an opening for the passage of a large nerve. Its principal insertion is by a flat tendon into the superior and anterior part of the tibia internally.

15363738393940 The large adductor of the thigh; 153636 shew the fleshy origin of the semi-tendinosus from the flat tendon of this muscle or ligament running from the sacrum and coccygus to the ischium; 1539 mark the place where the semi-tendinosus ceases to arise from this tendon or

d The long adductor of the thigh.

e A flat tendon or fascia from the large adductor of the thigh.

f g Gemelli; *f* the fleshy belly, the external surface of which is tendinous at *f*; the tendon of this internal head wraps over the tendon of the plantaris to go to the external side of the heel; *g* the tendon of the external head.

h The tendon of the soleus.

l m n p r The tendon of the plantaris; *l* the part marked *r* in table the second; *m* the part marked *n* in table the second; *n* the part marked *s*, the part marked *g r* in table the second, being here cut off at *p*; the part marked *w* in table the second is cut off in this place; *r* the tendon on this side going to its insertion into the first bone of the toe.

u v x y z 30 The extensor digitorum pedis; *u* the fleshy part, marked 21 on the right limb in this table; *v* the part marked 22 on the right limb in this table; *x* the part marked 24 in this table on the right lower limb, and 14 in table the second on the left limb; *y* the part marked 16 in table the second; *z* the part marked 17 in table the second. It has an insertion at 30 into the great pastern with part of the tendon of the peroneus.

x The ligament marked 20 in table the second.

123 Tibialis anticus.

6 Popliteus; externally tendinous, particularly near its insertion.

7 Tibialis posticus.

88 Flexor digitorum pedis.

910 The bursal ligament.

11 The intermuscular ligament marked 26 on the left limb in this table.

121314 The internal anterior ligament which binds the patella to the tibia.

151516 A membranous covering of the bursal ligament, betwixt which and the bursal ligament are contained the mucilaginous glands of this joint.

16 The internal articular ligament which connects the os femoris to the tibia.

1818 The articular ligament which binds the tibia to the bones of the tarsus.

222323 The ligament marked 899 in table the second. It is a strong ligament which binds the os calcis to the astragalus, os naviculare, ossa cuneiformia, and splint bone, arising from a protuberance about 23 and inserted into the other bones of the tarsus and metatarsus about 2323.

25 A nerve called sciaticus internus.

26 The ligament marked 19 in table the second.

27 Interosseus, &c. marked 18 in table the second.

28 Nervus plantaris internus. It is a branch of the nervus sciaticus-tibialis.

29 Vena plantaris interna.

36 The villous covering of the coffin bone, is here left on to shew its thickness.

In the internal Side of the left upper Limb.

a b c Extensor carpi radialis, marked *a b c d d* on the right upper limb in this table; *a* the fleshy belly; *b c* the tendon; *c* its insertion into the metacarpal bone.

d A ligamentous fascia.

e Profundus.

f g The muscle which is analogous to the extensors of the thumb, marked *f g* on the left upper limb in this table.

h The tendon of the extensor digitorum communis.

i Nervus medianus.

k Arteria brachialis, or the humeral artery.

l m n The bursal ligament on the anterior part of this juncture

o Flexor carpi radialis.

p Sublimis.

q Flexor carpi ulnaris.

r Interosseus, &c. It arises from the bones of the carpus and upper part of the metacarpal bones, is inserted into the sesamoid bones and great pastern on each side, and sends off the ligament *r* on this side to the tendon of the extensor digitorum, which it binds down. It is of a ligamentous nature, but supplies the places of the interossei manus and abductors of the fore finger, little finger, and short abductor of the thumb, with the adductors of the thumb and little finger.

s Vena cephalica.

t Vena plantaris interna.

u Nervus plantaris internus.

v The villous covering of the coffin bone is here left on to shew its thickness.

ligament on this side, and where the fleshy fibres of this muscle begin to arise on the other side of the tendon; at 37 and 38 the surface is tendinous, but strongest about 37, where tendinous fibres run as marked in a transverse direction from the ligament or fascia lata; 3939 the place where the expansion is cut off which is sent from the fascia lata before it runs in betwixt the biceps and semi-tendinosus; 40 the external fleshy part of this muscle. The fascia sending off an expansion before it goes in betwixt the biceps and semi-tendinosus, which is fixed to the large adductor of the thigh at 3939, and this fascia being attached to the edge of the broad tendon of this muscle or running over it, as at 37, makes a complete case for the semi-tendinosus above the process of the ischium, which keeps it firmly in its place. This muscle arises from the ligament running from the sacrum and coccygus to the ischium; its principal origin is from the tubercle of the ischium; it is inserted by a strong tendon into the internal condyle of the humerus behind the origin of the articular ligament and a little below it, and by a flat tendon into the articular ligament and tendon of the semi-tendinosus. It joins in with the long adductor near its insertion.

50515253 Peroneus; 50 its origin from the upper part of the fibula and articular ligament 54; 51 its fleshy belly; 5253 its tendon joining in with the long extensor of the toes at 53, part of which is inserted into the great pastern along with part of that tendon at 30.

5859 Flexor digitorum; 58 the fleshy part; 59 the tendon.

606061626364 Gemelli; 6060 a sort of flat tendon which may be easily separated from the muscle to which it only adheres by its external edge: it runs over the surface of the muscle and joins in with the fascias sent from the semi-tendinosus, &c. which joins in both above and below, and by that means makes a case for the tendon of the gemelli and plantaris; 61 the externally tendinous origin of the external head of the gemelli; 6262 the fleshy parts; 63 the fleshy part under the expansion 60; 64 the tendons of the external and internal head of the gemelli; that upon which the 6 lies is the tendon of the internal head, and that which the 4 lies on is the tendon of the external head; the tendon 60 wraps over it a little above 6 to be inserted more internally into the os calcis; so that these three tendons, along with that of the plantaris, are twisted like a rope.

6868 The tendon of the plantaris, wrapping over the tendon of the gemelli at 68. This muscle arises under the external head of the gemelli (in which it is in a manner wrapped up) out of the large fossa or notch in the os femoris; above the external condyle on the external side of its fleshy belly the gemelli is attached to it by fleshy fibres; at 68 it runs over the end of the os calcis, where it is bound on each side by ligaments which prevent its slipping either way; at 69 it divides to be inserted on each side of the inferior part of the great pastern posteriorly, and to give passage to the tendon of the flexor digitorum pedis, to which tendon it serves as a ligament to confine it to the great pastern when the fetlock joint is bent, and by that means it receives assistance from that tendon in bending the fetlock joint. This is analogous to the plantaris and short flexor of the toes in the human body, viz. the part above 68 to the plantaris, and the part below to the short flexor of the toes.

707171 Articular ligaments; 70 that which binds the tibia to the bones of the tarsus; 7171 that which binds the os calcis to the splint bone.

72 A capsular ligament.

7475 Interosseus, &c. it arises from some of the tarsal bones and the upper part of the metatarsal bone, and is inserted into the sesamoid bones and great pastern on each side; it sends off the ligament 76 and another on the other side to bind down the tendon of the extensor digitorum pedis. This is of a ligamentous nature, but supplies the places of the interossei, the short flexor, adductor, and abductor of the great toe, the abductor and short flexor proper to the little toe, and a ligament which arises from the calcaneum and belongs to the cuboid bone, but sends off an excursion which joins the origins of the short flexors of the little toe in the human body: the ligamentous aponeurosis 75 is sent partly from the interossei, &c. and partly from the capsula of the fetlock joint to the tendon of the extensor digitorum pedis.

76 Arteria tibialis anterior.

77 A vein from the biceps cruris on which appears a valve. It is a branch of the obturator. It is accompanied with a nerve.

81 A large vein, on which several valves are marked.

82 A nerve which accompanies the vein 81 to go under the fascia 35, and which is marked 9 in the first table. It is a branch of the large crural nerve.

83 Nerves going to the tibialis anticus. They are some of the small sciatic rami.

84 The external nervus plantaris.

85 The external vena plantaris.

86 A substance which resembles the villous surface of a mushroom, marked 13 and 3 in table the second, is here left to shew its thickness or depth: it is the same on all the feet.

In the internal Side of the left lower Limb.

A a The tendinous surface of the rectus cruris, inserted at *a* into the patella.

b b c 12 Vastus internus, inserted at *b b* into the patella; at *A a* into the rectus; and at 12 into the ligament 1314.

THE FOURTH ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE EXPLAINED.

In the Head.

a b The globe or ball of the eye; *a* the pupil; *b* the white of the eye, or tunica sclerotica, covered with the albuginea or tendons of the straight muscles only, and not covered with the tunica adnata or conjunctiva.

c One of the lachrymal glands placed in the great canthus of the eye, called caruncula lachrymalis and glandula lachrymalis inferior.

d The semi-lunar fold, formed by the conjunctiva.

e Attollens.

f Deprimens.

g Adducens.

h Abducens.

i Obliquus superior.

k Obliquus inferior.

l The trochlea.

m n n o Caninus, or the elevator of the corner of the mouth; *m n* its origin; *n n* its insertion into the orbicularis oris; *o* its insertion into the buccinator.

p p Orbicularis oris, or the orbicular muscle of the mouth.

q r The glandulous membrane which lines the inside of the lips; *q* that of the lower lip; *r* that of the upper lip, the glands of which are called glandulae buccales.

s The elevator of the chin.

t u The short nasal muscle of the upper lip.

w v Buccinator; it arises from three different places; the superior fibres arise from the alveoli of the upper jaw; the middle fibres from the ligamentum inter maxillare, and the inferior from the lower jaw: it is inserted into the glandulous membrane of the inside of the cheek and lips, and into the orbicularis oris.

x The anterior dilator of the nostril.

y The pituitary membrane on the inside of the alveolar narium.

z The salivary duct.

1 Vena jugularis externa posterior or superior.

2 Vena temporalis.

3 Arteria angularis.

4 Vena angularis.

5 Nervus superciliaris, the ramus superior, or frontalis: it is the most considerable of the three rami of the nervus ophthalmicus commonly called ophthalmicus, which is the first branch of the fifth pair of nerves: it passes through the foramen supercilare, is spent on the musculus frontalis, orbicularis and integuments.

6789 The second branch of the fifth pair of nerves called nervus maxillaris superior; 7 a branch which goes to the long nasal muscle of the upper lip; 8 a branch which goes to the inside of the nose towards the tip of the nose; 9 branches which go to the upper lip.

10 The anterior cartilage of the outer ear.

11 The ear.

In the Neck.

a Glandula thyroidea.

b b c d d e f f f The carotid artery: it sends branches at *b b* to the glandula thyroidea; *d d* branches which give off ramifications to the sterno thyroideus; *e* branches which go to the caroticothyroideus; *f f f* branches going to the aspera arteria: these branches of arteries are all accompanied with veins.

g An artery and vein running over the gula.

h h The third branch of the eighth pair of nerves.

i i i i Oesophagus.

k k Trachea arteria, aspera arteria, or wind-pipe.

l m n Sternothyroideus; *m* the thick fleshy part near its origin at the superior, and internal part of the sternum; *l* its middle tendon; *n* its insertion into the thyroid cartilage.

o p Cryothyroideus; *p* its origin from the cryoide cartilage; *o* its thyroidal insertion.

q q The lower constrictor of the pharynx.

r Hyo-thyroideus, or thyro-hyoideus.

s The lower, and anterior part of the thyroid cartilage.

t u Rectus capitis posterior major; *t* its origin from the spine or ridge of the lower oblique process of the second vertebra of the neck.

u = Rectus capitis posterior minor, or rather medius; *w* the part coming from its origin at the spine of the second vertebra of the neck: it begins its origin at the root of the oblique process, just where the rectus major ceases to arise, and continues its origin about three minutes up the spine or ridge; *x* the part going to be inserted by a tendon, short and broad, into the occiput, wrapping over the surface of the intervertebralis.

y = Obliquus capitis superior: *y* its fleshy origin, which is pretty deep, from the broad transverse process of the atlas; *z* its insertion into the occiput.

A B Obliquus capitis inferior: *A* its origin, at all the length of the spine of the oblique process of the second vertebra of the neck above *A*, where it runs under the rectus capitis posterior longus: it is externally tendinous: it arises from all the posterior part of that vertebra which the intervertebralis does not cover; *B* its insertion into the anterior part of the broad transverse process of the atlas which the intervertebralis does not cover.

C D E F G H I K Longus colli; *C H D E F* the parts arising from the transverse processes of the third, fourth, fifth, and sixth vertebrae of the neck: *H* the part which is inserted into the anterior part of the body and transverse processes of the second vertebra, as *C D E F* run in part to be inserted into the anterior parts of the transverse processes and bodies of the vertebrae above them, as well as join the part *I*, which goes to be inserted into the anterior part of the body of the first vertebra; the part *H* may be divided into a distinct muscle, or nearly so, and probably the parts *D E F* may be so too; *I K* the part inserted into the anterior oblique process of the sixth vertebra; *I* the tendon; *K* a fleshy part. Its inferior origin is from the anterior lateral part of the body of the last vertebra of the neck, and the five uppermost of the back.

L L, &c. *M M*, &c. Intertransversarii posteriores colli; *L L*, &c. their insertions into the transverse processes of the vertebrae of the neck; *M M*, &c. their origins from the roots of the oblique processes, and the part betwixt them and the transverse processes. For each insertion there seems to be an origin from the lower oblique process of the vertebra below it, and the upper oblique process; or it rather seems to be at the root of the upper oblique process, and almost down to the lower oblique process of that vertebra, and betwixt the oblique and transverse processes where the intervertebralis does not cover. The lowest origin is from the first vertebra of the back, part of which is inserted into the transverse process of the seventh vertebra of the neck.

N N N Intervertebrales appearing betwixt the origins of the intertransversarii posteriores colli: they arise from the succeeding oblique processes of the five inferior vertebrae of the neck, and from the space betwixt the oblique processes of the uppermost vertebra of the back: they are each of them inserted into the lateral parts of the bodies of the vertebra above their origin.

O O O P Q The multifidus of the spine, arising at *O O O P* from the descending oblique processes of the vertebrae of the neck, partly externally tendinous, as marked at *O O O*; the part *O*, from the descending process of the third vertebra, is wholly inserted into the spine of the descending process of the second vertebra of the neck, and the external part marked *O O* of the two vertebrae below that; so that there are origins from three different vertebrae which unite in their insertions into one: the short parts, or those origins which are nearest their insertions, arise most internally, and those of a middling length, arise betwixt the long ones and short ones: the longest fibres, or those which arise most externally, have their insertions nearest the spinal processes, or their fellows on the other side; and the short ones nearest the oblique processes: those of a middling length have their insertions betwixt the two.

R T U Spinalis cervicis; *R* its origin from the second spine of the back, which origin is continued for about one third of the way down that spine towards its root: it arises also from the third spine or the ligamentum colli; near *R* it communicates with the semi-spinalis dorsi: *T* the part going to be inserted into the spinal process of the fourth vertebra of the neck; it is also inserted into the fifth spinal process: *U* the part going to be inserted into the spinal process of the sixth vertebra of the neck by a strong flat tendon: there is also a part under this which arises from the spine of the first vertebra of the back, from its tip about half way down to its root, and goes to be inserted into the spine of the seventh vertebra of the neck: it has an origin also from the ligament that goes from the spine of the second vertebra of the back to the first for its whole length, which is inserted into the spine of the neck.

This might be called interspinalis dorsi at cervicis, because its situation is entirely amongst the spines arising from those of the back to be inserted into those of the neck.

1111 Branches of the cervical nerves.

22 Branches of the cervical arteries.

33 Branches of the cervical veins.

4 Part of the jugular vein.

5 Ligamentum colli.

In the Shoulder.

a b Sub-scapularis.

d e f Teres major; *d* its origin from the inferior costa of the scapula; *e* a part externally tendinous, going to be inserted into the humerus betwixt the brachialis externus and caraco brachialis; *f* a part

g h i k l m n Longissimus dorsi; *g* the tendon inserted into the transverse process of the seventh vertebra of the neck: it is inserted by distinct flat tendons into the transverse processes of the vertebrae of the back; the lateral part of it is inserted into the lower convex edge of all that part of the ribs that lies between the sacro-lumbalis and elevators of the ribs, tendinous and fleshy; or it is inserted into the rib of those that appear from under the sacro-lumbalis and elevators of the ribs, (which are about seven,) at its protruberant part, where it joins to the vertebra, and then the insertion becomes in each rib gradually broader, partly tendinous, and partly fleshy, till it comes to the last rib, where it is about nine minutes broad: it is also inserted into all the transverse processes of the vertebrae of the loins the whole length of their inferior edges: its externally tendinous part, near the spines, is very thick, but diminishing as it advances towards the sacro-lumbalis. The fleshy part *h h* appears through the tendinous surface of this muscle: it arises from the spine of the last vertebra of the loins, and from the three uppermost spines of the sacrum strongly tendinous, as well as from the superior posterior edge of the ilium *i i*, and fleshy from the inside of the ligament *k k h*, which is a very strong one, especially near the ilium; at *h* it arises fleshy from all the anterior sides of the ilium which is behind the transverse process of the os sacrum.

l m n, &c. *Sacro-lumbalis*; *l* the part that arises from, or with, the longissimus dorsi by a small tendon in this subject it receives originations by flat tendons about half the breadth of the muscle from the superior edge of all the ribs except two or three of the uppermost; and is inserted, by distinct flat tendons, into the inferior edge of all the ribs except two or three of the lowest; and into the transverse process of the seventh vertebra of the neck, as at *o*; *m n*, &c. mark its insertions into the ribs, each tendon running upon the surface of the muscle over about three ribs below its insertion; *n* the part externally fleshy.

p p r s t u Transversalis abdominis; *p p* the part coming from its origin from the transverse processes of the three or four uppermost vertebrae of the loins; at *P* it is joined by a tendinous origin from the spine of the ilium; *r* its origin from the lowest rib, which is continued down all the length of the inferior edge of the bony part of the rib from *r* to its conjunction with the vertebra; *p p r s t* its fleshy part; *u* its tendon which is inserted into the ensiform cartilage and linea alba. It is more fully explained in table the fourteenth.

w Arteria epigastrica, or the internal branch of the external iliac.

x x x Branches of the nervi lumbares which go to the abdominal muscles and integuments.

y y The external branch of the outer iliac in two ramifications, accompanied by the external branch of the outer iliac vein in two ramifications.

z Mammaria interna.

In the right lower Limb.

e f f g The iliacus internus; *f f* its origin from the ilium; at *g* it is tendinous on the surface; at *e g* it has an origin from the fascia lata; it joins in with the psoas magnus from its origin, and is with it inserted into the little trochanter of the thigh bone. They seem to be but one muscle.

h i k l l Gluteus internus; *h* its origin from the ilium, externally tendinous, but inwardly fleshy; it is externally fleshy at *i*; at *k h k* are tendinous lines. It is inserted into the great trochanter at *l h k l*.

p q q r s t The large adductor of the thigh; *p* the flat tendon by which it arises from the ligament running from the sacrum and coccyx to the ischium; *q q* the beginning of the fleshy part on this side, externally tendinous; *r* the external fleshy part; *s* the place where its thick belly begins to diminish, conforming to the belly of the gemelli; it is inserted by a strong tendon into the internal condyle of the os femoris behind the origin of the articular ligament and a little below it.

u w The gracilis; *w* the fleshy part; *u* the tendon.

x y Musculus parvus in articulatione femoris stans; *x* the fleshy part; *y* the tendon.

11123456 Cruralis; 111 its origin by small flat tendons externally, but internally fleshy; 23 the place where the tendinous surface begins to disappear; 34 its insertion into the patella and internal ligament; at 3 it is partly divided for the reception of blood-vessels; and its origin at 6 is confounded with the two vasti.

789 Vastus internus; 8 its origin along with the cruralis from the femur; 9 its tendinous insertion into the patella; it has a fleshy insertion about half way up the femur into the external tendinous surface on the internal side of the cruralis; or these two may be joined together, and called but one penniform muscle, the tendon spoken of receiving the fleshy insertions of the vastus internus on one side, and on the other of that part of the cruralis marked 1112253; and the part 346 only may be called cruralis, being distinct from the patella up to the part 6, where, at its origin, it is confounded with the fleshy fibres of the two vasti; the origin of these muscles, except 346, is from the upper part of the thigh bone, and continued down that bone to 6.

10 The lateral ligament of the external side of the patella which binds that bone to the external condyle of the os femoris.

11 The middle or anterior ligament of the patella which binds that bone to the tibia.

12 The lateral ligament of the internal side of the patella which binds that bone to the tibia.

covered with communicating tendinous fibres, by which it and the fifth head of the extensor of the cubit are joined.

g h i k l m n Longus minor, or the fifth extensor of the cubit; *d g* its origin from the inferior angle of the scapula, and tendinous surface of the teres major; *A* shows some remaining fleshy fibres where the longus major was attached to its flat tendon; *g h i k* its flat tendon from which the fleshy part *i l* arises at *i*, and runs towards the tendon *m* to be inserted into the inside of the ancon; *k* shows the outline of the tendon of the latissimus dorsi and membrana carnea, which is inseparably joined to the teres major, and makes with it but one tendon, though the fibres from this muscle, in some measure, intersect those of the teres major, and are inserted into the humerus, making the upper angle of the tendon along with the upper part of the teres major. The fibres which come from the anterior part of the latissimus dorsi are inserted the highest (being intersected by the posterior part which runs over the inferior angle of the scapula) going to their insertion with the lower part of the tendon of the teres major.

n o Brachialis internus; arises from the upper part of the os humeri betwixt the beginning of the brachialis internus and the tendon of the teres major; *o* the part where it begins to be tendinous and goes to be inserted into the extremity of the ancon.

p p q The inferior part of the serratus major anticus.

r Nervus cubitalis.

s Nervus radialis.

t Nervus musculocutaneus.

u Nervus medianus.

w Branches of the arteria and vena axillaris.

Muscles, &c. on the Trunk.

11, &c. 22, &c. The external intercostals; they arise at 11, &c. from the inferior edge and a little of the outside of each rib, the last excepted; they are a little tendinous, and descending obliquely downwards, are inserted at 22, &c. into the upper edge and a little of the outside of each rib, the first excepted.

33, &c. 44, &c. The internal intercostals; they arise at 33, &c. from the superior edge of the bony part of each rib except the first, not covering any of the outside, and from the edges of the cartilages of the ribs and a considerable part of the outside of them; they are chiefly externally tendinous, but partly fleshy, and ascending obliquely upwards, and forwards are inserted into the lower edge of the bony part of each rib, and into the edges and part of the outside of their cartilages, the last rib excepted.

55555 Branches of the nervi costales, lying upon the transversales, which go to the abdominal muscles and integuments.

The nerves and blood-vessels which are marked on the thorax are those which were distributed to the parts taken off, as the obliquus internus and externus, latissimus dorsi, membrana carnea, &c. and integuments; the nerves come from the nervi dorsales, and nervi lumbares; the arteries from the arteriae intercostales inferiores, and arteriae lumbares, the veins from the vena intercostales and vena lumbares.

a b c d e e f f The semi-spinalis and spinalis dorsi; *a b e f f* semi-spinalis dorsi, which arises fleshy from all that space of the tendinous surface of the longissimus-dorsi that lies betwixt its outline marked *a a*, and the dotted out-line marked *b d* of the spinalis dorsi which lies under it, and then running over its strong tendinous surface marked with dotted lines; *b d e e* communicates with its fleshy fibres, and with them goes to be inserted into the spinal apophysis *f f*; it communicates with the spinalis cervicis, and is inserted under that part of it, *R*, which arises from the spine of the third vertebra of the back, or from the ligamentum colli; betwixt those two spines it sends a strong tendon also down to the spine of the first vertebra of the back; *c c d* spinalis dorsi, which arises by a strong ligamentous tendon under the semi-spinalis marked with dotted lines *b d e e*, which sends off fleshy fibres communicating with the semi-spinalis, and are inserted with it into the spines of the back *f f*; it is also inserted into the inferior ridge of the second spine of the back, which insertion is continued about half way down from the end towards the root, and into the spine of the first dorsal vertebra, beginning its tendinous and fleshy insertion near the end, below the insertion of the tendon of the semi-spinalis, and continuing it for about half the length of that spine along its inferior ridge; its principal or strongest insertion is by a short, strong, roundish tendon into the spine of the seventh vertebra of the neck, which is the only part appearing as at *c c d*, the rest being under the scapula and semi-spinalis dorsi.

The semi-spinalis seems to make its insertions into the extremities, or very near them, of the ten superior spines of the back, and the spinalis makes its insertions all the way from the insertion of the semi-spinalis along their inferior ridges down to the insertions of the multifidus spinas, which is half the length of the seven uppermost, the insertion then diminishes till it comes almost to a point in the tenth spine: its origin is entirely tendinous from the eleventh, twelfth, thirteenth, fourteenth, fifteenth, and sixteenth spinal processes of the back.

1313 The bursal ligament of the knee, betwixt which and that marked 34 in table the third, lie the mucilaginous glands.

1414151617181920 Tibialis anticus; 1414 its origin from the superior and anterior part of the tibia; 15 its tendinous origin from the inferior part of the os femoris: this is a very strong tendon, into which the fleshy part, which arises from the tibia at 1414, begins to be inserted, after running down about one third of the length of the tibia; soon after which insertion fleshy fibres run from this, obliquely downwards and inwards, to be inserted into a flat tendon; which is a continuation of what may be called the proper and inferior tendon of the tibialis anticus marked 20: the internal or posterior part of this muscle, which is externally tendinous, makes a fleshy body much thicker than, or about twice as thick, as the anterior fleshy part: the superior part, running from the tibia obliquely downwards and outwards, and then from the external posterior surface obliquely downwards, is also inserted into the middle tendon: it comes to be fleshy about the bottom of the tibia, where the internal or posterior tendon and middle tendon form the tendon 20, which is inserted into the os calcis, forming a metatarsal bone; the part 19 into the os cuboide, it divides for the passage of some blood-vessels and then unites again; and the part 18 into the ossa cuneiforma posteriori running over the internal articular ligament as far back as the posterior edge of the epint bone.

23242526272829 Flexor digitorum pedis; 23 its tendinous and fleshy origin from the fibula and articular ligament, and from the superior and posterior part of the tibia, which origin is continued near half the way down that bone from a considerable roughness: the protruberant parts of which give rise to the four or five tendinous parts composing this muscle: they intermix with the carnosus part in this manner, the fibres descend obliquely downwards from the fascia 26262727 to be inserted into the tendon which lies next it; and that tendon receives the carnosus fibres descending from the tendinous part which is next to it more internally; and that tendon sends fibres obliquely downwards to the next which is still more internal, and so on of the rest; one receiving fleshy fibres from each side, and that next it sending them off to each side, the external fascia only excepted, which sends fleshy fibres to this muscle only inwards, being the cover of this muscle: this fascia on the external side where it is marked 2626, gives origin to the fleshy fibres of the peroneus: it is joined by the fascia which arises from the internal posterior edge of the tibia when that fascia has run over the tibialis posterior, which it serves to bind down in its proper place. There is some part of the origin seen at 28 from betwixt the tibia and fibula: 2727 the origin of the fascia which covers this muscle, which is strong and tendinous near its origin, from the articular ligament, and fibula, or rather from the articular ligament which runs from the external condyle of the humerus all the way down the external side of the tibia, and by which the fibula is attached to the tibia, as well as by a ligament which arises from the external edge of the tibia and descends obliquely downwards to be inserted into the fibula; 24 the external part of this muscle where the fleshy fibres may be seen through the fascia; 2525 the tendon.

2830 Popliteus; 28 the tendon arising under the articular ligament.

30 The articular ligament, which runs all the way down the fibula, and to the bottom of the tibia.

31 An articular ligament.

32 A ligament which binds the os calcis to the epint bone.

33 An articular ligament.

34 Arteria sciatica, accompanied with a vein.

3535 Branches of the arteria glutea, accompanied with veins and nerves.

36 A branch of the arteria obturatoria, accompanied with a vein.

37 A branch of the arteria obturatoria.

38 A branch of the vena cruralis, in which appear some valves.

39 A branch of the arteria poplitea.

41 A branch of the vena poplitea.

42 Arteria poplitea.

43 Vena poplitea, in which appears a valve.

44 Nerves going to the tibialis anticus. They are ruin of the small sciatic branch.

45 Arteria tibialis anterior.

46 Vena tibialis anterior, in which appear some valves.

47 Glandulae popliteae, commonly called the popliteal eye.

48 Vena sapientia.

49 The outer cartilage belonging to the coffin bone.

50 The inner cartilage belonging to the coffin bone.

401424243444549 The plantaris; 40 its origin from the os femoris; 41 a place where the gemellus is attached to it by fleshy fibres; 4242 the tendon inserted at 43 into the first bone of the toe; 43 a ligament arising from the os calcis and inserted into this tendon, which keeps it steady upon the end of that bone; 44 a ligament arising from the first bone of the toe, and inserted into this tendon; the ligament 45, which arises from the sesamoid bone, is not attached to it but runs over it, and serves as well as the ligament 44 to prevent its starting from those bones when the joint is bent. The insertion 43 is but half of its tendon, it being divided, and the other half inserted into the in-

tarsal posterior edge of the osseous bone, leaving, by that division, a passage for the flexor digitorum pedis, which is seen at 25 lying betwixt the tendon of the plantaris and the bone.

- 46 A capsular ligament.
- 47 An articular ligament.
- 48 A capsular ligament.
- 49 A ligament which binds the tendon of the plantaris to the os calcis, and may be called part of the origin of the short flexor of the toes.
- 50 An articular ligament.

In the left lower Limb.

- a Arteria cruralis.
- b Vena cruralis.
- h h i Popliteus; h h its insertion into the tibia externally tendinous; i the fleshy part coming from its origin from the external condyle of the femur which is marked 28 on the left limb in this table.
- h h m s o p Plantaris; h the fleshy belly; i m m the tendon; o a ligament arising from the os calcis and inserted into the tendon of the plantaris, which it confines in its place; its fellow is marked 40 on the right limb in this table. This ligament may be called part of the origin of the short flexor of the toes; n its insertion into the first bone of the toe; the external insertion is marked 43 on the right lower limb in this table; betwixt these insertions the tendon of the flexor digitorum pedis runs down to its insertion into the coffin bone; p a ligament arising from the first bone of the toe and inserted into the tendon.
- g A ligament which arises from one osseous bone and runs over the tendon of the plantaris to be inserted into the other, and serves to bind down that tendon.
- 23 Tibialis posticus; 1 the fleshy belly; 23 the tendon inserted into the tendon of the flexor digitorum pedis.
- 4 Flexor digitorum pedis, marked 23 24 25 26 27 27 27 on the right limb in this table.
- 10 11 12 13 15 16 Tibialis anticus; 10 the fleshy part marked 14 on the left limb in this table; 11 the part marked 16; 12 the part marked 19; 13 the part marked 18; and 15 is one tendon of the fleshy part of this muscle, inserted into the osseous cuneiforma posteriorly running over the internal articular ligament as far back as the posterior edge of the splint bone; the part 16 is inserted into the superior and anterior edge of the metatarsal bone; the part marked 18 runs under the tendon 15 to its insertion into the osseous cuneiforma.
- 17 17 18 The internal lateral ligament, which binds the patella to the os femoris; 18 its origin from the os femoris; 17 17 its insertion into the patella.
- 19 19 20 The internal lateral ligament, which binds the patella to the tibia; 20 its origin from the tibia; 19 19 its insertion into the patella.—This is marked 12 on the left limb in this table.
- 21 22 The external lateral or anterior ligament, which binds the patella to the tibia, marked 11 on the left limb in this table; 21 its origin from the tibia; 22 its insertion into the patella.
- 23 24 The internal, lateral, articular ligament, which binds the tibia to the os femoris.
- 25 25 The bursal ligament of the knee, with some few of the mucilaginous glands left on which lie betwixt this ligament and that marked 15 16 15 15 in table the third.
- 26 Interosus, &c.
- 27 28 An articular ligament.
- 34 The articular ligament of the fetlock joint.
- 35 The bursal ligament. This is a strong thick ligament, and about this place almost cartilaginous. To this the tendon of the extensor digitorum is strongly attached.
- 36 A bursal ligament.
- 37 An articular ligament.
- 38 An articular ligament.
- 39 Branches of the vena tibialis anterior.
- 40 A nerve called sciaticus internus.
- 41 The inner cartilage belonging to the coffin bone.

In the right upper Limb.

- a l c Brachialis internus. It arises at a from the neck of the humerus, and the internal lower part of the scapula; c the part which goes to be inserted into the radius a little below the insertion of the biceps and more internally.
- d e f f h i Flexor digitorum profundus; d e the first or largest head, explained in table the third, with the other three heads of this muscle; d the fleshy part; e the tendinous part; g h the third described head; g the fleshy part; h the tendon; i the last described head, appearing here a little; f f the common tendon, inserted into the coffin bone.—See table fourteen for a fuller explanation.
- h A ligament which runs down the small end of the ulna, to be inserted into the ligament or bones of the carpus, and to which the fascia is inserted on this side, which covers the bending muscles on the cubit.

K

- 10 The anterior cartilage of the outer ear.
- 11 The outer ear.

In the Neck.

- a Rectus anticus brevis, or minor; a its origin from the lateral part of the body, rather anteriorly, and from the root of the transverse process of the first vertebra of the neck. It is inserted into the occiput in its anterior process or appendix, or to the edge of the bone adjoining to it.
- d Cricocarytoidæus lateralis.
- e Cricocarytoidæus posticus.
- f A very small part of the arytenoidæus.
- g h h h h Oesophagus; g the membrane bored by taking away the lower constrictor of the pharynx, and freed a little from its attachment to the thyroid cartilage i to show the insertion of the cricoarytoidæus lateralis.
- i k The thyroid cartilage; at the lower process, tied to the arytenoid cartilage by the ligament m.
- l The annular, or arytenoid cartilage.
- n The ligament by which the thyroid or scutiform, and the arytenoid or annular cartilages are tied one to the other in the anterior part.
- m A ligament which ties the lower process of the thyroid or scutiform cartilage to the arytenoid cartilage.
- o o o Trachea arteria, aspera arteria, or wind-pipe.
- p p The carotid artery, or carotis communis.
- 1 Arteria carotis externa, or the external carotid.
- 2 Arteria carotis interna, or the internal carotid.
- g g The trunk of the eighth pair of nerves.
- 3 A branch of the eighth pair of nerves.
- 4 Arteria cervicalis, or the cervical artery.
- 5 Vena cervicalis.
- r s Rectus posticus brevis, or internus; r its origin from the atlas; s its insertion into the occiput.
- u Intervertebralis; t its origin from the ascending oblique process of the third vertebra; u its insertion into the lateral part of the body of the second.
- x n, &c. The five inferior intervertebrales, which answer to the same explanation as a, superior, only that the lowest arises from the space betwixt the oblique process of the uppermost vertebra of the back, and the rest arise from the superior oblique processes only: their anterior and inferior fleshy parts seem to be confounded with the intertransversarii posteriores colli, but their upper and posterior parts are distinct, the nerves and blood-vessels coming from betwixt the vertebrae to go to the back of the neck running betwixt them.
- x x x y The multifidus of the spine arising at x x x from the descending oblique processes of the vertebrae of the neck, externally tendinous; y its uppermost insertion into the spine of the descending process of the second vertebra of the neck. This is more fully explained in tables the fourth and fourteenth.
- z One of the scalene, or rather the elevator of the first rib arising at z from the transverse process of the seventh vertebra of the neck. It is inserted into the first rib.
- 1 2 3 4 5 6 6, &c. 7 8 8, &c. Ligamentum colli; it is a double ligament; 1 the superior or posterior part, which begins to distinguish itself about the fifteenth spine of the back on the lateral part of its extremity, by being broader than the extremity of the spine; from which projecting part the inferior part of the tracheus begins about the fourteenth spine; it distinguishes itself about this place also by a small groove or channel that is formed betwixt it and its fellow; but its origin is not to be absolutely fixed in this place, because in conjunction with the interspinal ligaments it runs down the back and loins, and probably to the end of the tail, joining both sides together, they are on the spinal process of the vertebrae of the back, about one minute broad, or rather more, then extending in breadth as they arise from the superior vertebrae till they come to the third spinal process, where they are about four minutes broad, they leave their origin in two distinct portions, joined only by an intervening ligament, the fibres of which run in a transverse direction from one part to the other: there is a deep groove or channel continued betwixt them for about one part and six minutes, as they ascend towards the occiput, as far as 2; then diminishing in breadth, they become almost round, and insert themselves into the occiput at 5 about two minutes diameter lying both close together; 3 the part of the ligament arising from the spines of the second and third vertebrae of the back; 4 an intervening ligament, which joins the two origins of the ligamentum colli together; 6 6 6 6 6 the insertions into the spinal processes of the superior vertebrae of the neck; 7 the interspinal ligament betwixt the first and second vertebrae of the neck; 8 8 8 8 a strong communicative membrane which fills up the opening betwixt the insertions of this ligament, on which some straggling filaments of the ligament are expanded.
- 13 13 14 15 The capsular ligament of the articulation betwixt the head and first vertebra of the neck; 13 13 the part inserted into the first vertebra; above 14 it is inserted into the occiput; 15 its

l m Flexor digitorum sublimis; l a little of the fleshy part; m the tendon inserted into the great pastern.

- n n n n Articular ligaments.
- o o o Bursal ligaments.
- p Vena cephalica.
- q Interosus, &c.
- r The outer cartilage belonging to the coffin bone.

In the left upper Limb.

- a b c Brachialis internus, made a little concave at b by the biceps; c its insertion into the radius.
- d Nervus medianus.
- e Arteria brachialis.
- f Vena brachialis.
- g Vena cephalica.
- i Flexor carpi radialis.
- l m Flexor digitorum sublimis; l the fleshy part; m the tendon.
- n o p p Flexor digitorum profundus; n the head marked g h on the right upper limb in this table p p the tendon.
- q q q q Articular ligaments.
- r r r Bursal ligaments.
- s Interosus, &c.
- t The inner cartilage belonging to the coffin bone.

THE FIFTH ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE EXPLAINED.

In the Head.

- a Musculus septimus oculi suspensorius, arises from the margin of the hole through which the optic nerve passes into the eye, and is inserted (being divided into several fleshy portions) into the lower or posterior part of the sclerotic below the termination of the other muscles.
- b Obliquus superior.
- c The trochlea.
- d Obliquus inferior.
- e Attolens.
- f Deprimens.
- g Adducens.
- h Abducens.
- i The semi-lunar fold, formed by the conjunctiva, which incloses a sort of gland, the internal part of which is a thick and firm glandular substance terminating in fat; the external or lunar edge is broad and very thin, of a cartilaginous nature, before which lies the caruncula larymalis, or glandula larymalis inferior.
- h The optic nerve where the eye is cut away.
- l l m n o o o p The glandulous membrane of the inside of the lips and cheek; o o o the part in which the buccinator is inserted, which is thicker than the rest and more free from glands; l l m p the glands called glandulae labiales; they are thickened near the corners of the mouth and beginning of the upper lip; n n glandulae buccales.
- q The elevator of the chin.
- 1 Vena angularis.
- 2 Arteria angularis.
- 3 Nervi maxillaris inferioris; they are the third branch of the fifth pair of nerves.
- 4 5 6 Nervi maxillaris superioris; they are branches of the third branch of the fifth pair of nerves; 4 branches which go to the upper lip; 5 a branch which goes to the inside of the nostril towards the tip of the nose; 6 a branch which goes to the long nasal muscle of the upper lip.
- 7 8 9 The cartilages of the nose; 7 the middle portion; it is a broad cartilaginous lamina, joined by a kind of symphysis to the anterior edge of the middle lamina of the os ethmoides, to the anterior edge of the vomer, and to the anterior part of the groove formed by the ossa maxillaria, as far as the nasal apices of these bones; this lamina completes the septum narium of which it forms the principal part; 8 the anterior lateral cartilage which forms the tip of the nose, or the superior anterior part of the nostril; 9 the posterior and inferior lateral cartilage, or rather bone, for in aged horses it seems to be perfect bone, which helps to form the inferior part of the nostrils.

insertion into the long process of the occipital bone, which seems to be a considerable addition to the mamillary process of the temporal bone.

- 16 The capsular ligament of the articulation betwixt the first and second vertebrae of the neck; the posterior part covers the spinal marrow, the lateral part covers the articulating part of the second vertebra of the neck, where it is covered with a smooth cartilage.
- 17 17 17 17 Shew the capsular ligaments of the articulations of the five inferior vertebrae of the neck, made by their oblique processes: they arise free from the bone just at the extremity of the oblique processes, and continue their origin round the articulating cartilages.
- 18 18, &c. The vertebral veins, arteries, and nerves of the neck.
- 19 Part of the jugular vein.

In the Trunk.

- a b, &c. The elevators of the ribs; they arise at a externally tendinous, from the transverse processes of all the vertebrae of the back (except the last) and from the last of the neck, to be inserted into the superior edge of all the ribs, each being inserted into the rib immediately below its origin, and running from its origin in a radiated manner; the posterior part, or that next the spine, running to the upper part of the rib almost transversely; the anterior part, or that farthest from the spine, running in an oblique direction downwards, to be inserted into the rib about nine minutes from its articulation with the vertebra, for about ten of the inferior ribs; then they diminish in length gradually, until the length of their insertion is but about six minutes from their articulation at the uppermost ribs.
- c c, &c. d d, &c. Multifidus spinae; c c, &c. their tendinous originations from the transverse processes of the vertebrae of the back; d d, &c. their tendinous and fleshy insertions into the spines of the back, loins, and sacrum; their origins and insertions are both tendinous and fleshy, but at the external parts of the origins, from the extremities of the posterior protuberances of the transverse processes, are the strongest tendinous parts, the external tendon expanding itself as it advances towards the insertions, leaves it externally fleshy near the insertions; but upon some of the superior spines, particularly those which lie under the scapula, it becomes externally tendinous near its insertions; the insertions nearest the ends of the spines are tendinous for the most part, those of the loins forming a roundish tendon about half a minute broad, and a quarter, or near it, thick.
- e f The lateral muscle of the tail arising at e from the spine of the last vertebra but one of the loins; f the fleshy part; it goes to be inserted by a tendon into the oblique process of the fifth vertebra of the tail, and also into two or three of the lower ones, and then joins in with the elevating muscles of the tail.
- g g, &c. The inter-transverse muscles of the tail arising from one vertebra, and inserted into the next, and so on through the whole length of the tail. There are muscles which arise from the upper or posterior part of the transverse processes, and are inserted into the oblique processes of the next but one or two below them.
- h The ligament which runs over the spines of the os sacrum.
- i The elevating muscle of the tail, beginning its origin from the inferior or posterior edge of the third spinal process of the os sacrum, which origin is continued from near the end of the spine about half way towards its root, its origin is continued fleshy from the sides, edges, and inter-spinal ligaments of the spines of the sacrum below that, from the whole length of the last of them, and after passing over one is inserted into the next oblique process, or next but one, below.
- k The depressing muscle of the tail, beginning its origin from under the transverse process of the third vertebra of the sacrum, and continuing from the transverse processes of those below from the whole breadth of them, and the inter-transverse ligaments. The fleshy fibres are inserted into the bodies of the vertebrae or bones of the tail.
- l l l The lungs appearing through the pleura.
- m m m n n The diaphragm appearing through the pleura; m m m the fleshy part; n n n the tendinous part.
- o o, &c. Nervi intercostales.
- p p, &c. Arterii intercostales.
- q The intestines, seen through the peritonæum.

In the right lower Limb.

- a b c Musculus parvus in articulatione femoris situs; a its round fleshy belly; b the flat tendon by which it arises over the tendon of the rectus cruris; c the flat tendon by which it is inserted into the os femoris.
- d e f The head of the rectus, left on to shew how that muscle arises from the os innominatum, being hid in table the third under the gluteus medius, and gluteus internus, and in table the fourth under the gluteus internus; d its origin from the external or posterior part of the inferior spine of the ilium, covered at b by the thin flat tendon of the musculus parvus in articulatione femoris situs; e its origin from the anterior part of the inferior spine of the ilium; f the place where the muscle is cut off.

In the Neck.

a b c Sterno-mastoideus, or sterno-maxillaris, because it arises at *a* from the top of the sternum and is inserted tendinous into the lower jaw bone under the parotid gland, and by a continuation of the same flat tendon into the root of the processus mastoideus.

d d Caracolyoides arises from the upper and internal side of the humerus, betwixt the insertions of the subscapularis and teres major by a flat membranous tendon, and is inserted into the os hyoides; it has a strong attachment to the anterior part of the levator humeri proprius, or rather the anterior part of the trapezius, by which it is confined in its proper place, being prevented forming a straight line when the neck is curved.

e e Longus colli.

f f Scalenus.

g h Inter-transversalis minor colli.

i k l m Serratus major anticus; *i* the part which arises from the transverse processes of the third and fourth vertebrae of the neck; *k* that from the fifth, *l* that from the sixth, *m* that from the seventh; it is inserted into the scapula. Betwixt these parts are marked arteries and nerves which go to the parts lying over them.

n n o o The jugular veins; *o o* are valves.

p Glandulae cervicales inferiores. See table second, 5.

In the Shoulders and Trunk.

a b c Serratus minor anticus arises from the sternum and part of the first rib, and from the cartilaginous endings of the second, third, and fourth ribs near their joining to the sternum: it is inserted into the superior costa near the basis of the scapula and tendinous surface of the supra-spinatus; and is connected to the teres minor by a fascia, which is sent from this muscle over the infra and supra-spinatus scapulae to its outer edge. Its flat tendon may be separated, some part of the way, to the basis and spine of the scapula, from the tendinous surface of the supra-spinatus scapulae.

d d e e f f g g h h Pectoralis; *d d e e* the superior part arising from the sternum at *d d*, which is, at *e e*, going to be inserted, by a flat membranous tendon, along with the levator humeri proprius into the humerus, together with or betwixt the biceps and brachialis internus; *f f g g h h* the part of this muscle which arises from the anterior part of the sternum at *f f*, thence running towards the muscles lying on the cubit ceases to be fleshy about *g g*, and sends a membranous tendon or fascia down the muscles on the inside the cubit, which is joined by the membrana carnea; *h h* the part which arises from the sponerosis of the external oblique muscle of the abdomen, and is inserted into the head of the os humeri internally.

i k l m n Supra-spinatus scapulae; *i k* its origin from the spine of the scapula; *l* its insertion into the head of the os humeri and capsular ligament on the inside of the biceps cubiti; *m* its insertion into the head of the os humeri and capsular ligament on the outside of the biceps cubiti.

o p q Infra-spinatus scapulae; *q* the tendon by which it is inserted into the protuberant part of the humerus.

r Teres minor.

s s t t u u Latissimus dorsi; *s s* the aponeurosis, or tendon of this muscle; *t t* the origin of its fleshy fibres; *u u* a fleshy part of this muscle, which runs over the inferior angle of the scapula; *u u* the fleshy part going to be inserted into the humerus.—The serratus major posticus protuberates a little under the aponeurosis of this muscle.

z Coraco-radialis.

y z Triceps brachii; *y* the head, called extensor longus; *z* extensor brevis.

111, &c. 222, &c. 33444666 Obliquus externus, or descendens abdominis; its superior origin is from the fifth rib: about 111, &c. it begins its origin from the ribs and intercostals, and continues it down to about 222, &c. where it ceases to adhere to them; 444 the fleshy part which does not adhere to the ribs, and intercostals; 33 mark the fleshy fibres arising from the fascia lata; 5 the fleshy part of this muscle which lies over the abdomen; 66 part of its insertion into the spine of the ilium.—Upon this muscle are marked a great many small branches from the intercostal arteries which go to the membrana carnea and integuments.

77 Longissimus dorsi.

In the upper Limb.

a b c d e f g h i A fascia or strong membranous production, lying over the extending muscles which are upon the cubit: *a a* its origin from the two external protuberant parts of the humerus, from the levator humeri proprius, from the trapezius, and from the anterior edge of the triceps: it is expanded like a strong ligament betwixt the two protuberant parts of the humerus, and gives origin to some of the fleshy fibres of the extensor carpi radialis; it is inserted into the radius on each side of the extending muscles, and into the muscular ligaments on the carpus; it makes a continued

5 A ligament proper to the extensor longus digitorum pedis protuberating under the membranous ligament.

6 A ligament common to the extensor longus digitorum pedis with the tendon of the peroneus; it arises from the bones of the tarsus and splint bone, and is inserted into the anterior and superior part of the metatarsal bone, and running membranous over the ligament 6 joins the ligament 4; its tendinous fibres run chiefly transverse, but some scattered irregular tendinous stripes from about 7 run obliquely downwards and inwards: there is an expansion running to this from the fascia which covers the flexor digitorum over the peroneus which completes a case for that muscle.

7 A ligament which binds down the tendon of the peroneus; it runs from the tibia to the os calcis: it is marked 34 in table the second.

8 A sort of ligamentous fascia, betwixt which and the bursal ligament the mucilaginous glands are contained; it is attached above, to the ligament 4, and below, to the ligament 6, on the inside to the articular ligament.

9 10 10 Interosseus, &c. it is like a strong ligament arising from the upper part of the metatarsal bones, and some of the tarsal bones, and is inserted into the sesamoid bones and first bone of the toe on each side, and sends off the ligaments 10 10 to the tendon of the extensor longus digitorum pedis.

11 The tendon of the flexor digitorum pedis.

12 12 The tendon of the plantaris.

13 13 Vena saphena.

14 Vena plantaris externa.

15 Vena plantaris interna, or a continuation of the vena saphena.

16 The vena plantaris arising from under the hoof.

17 The tendon of the gemelli, or tendo achilles, inserting itself into the os calcis, covered by the fasciae which are inserted into the os calcis.

18 Tibialis posticus.

19 A substance resembling the villous surface of a mushroom, arising from the coffin bone, received by the like substance arising from the hoof, which it mutually receives.

THE EIGHTH ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE, VIEWED IN FRONT, EXPLAINED.

In the Head.

a The anterior dilator of the nostril; the superior part is inserted into the superior edge of the ala nasi, the middle part *a* into the cartilage, and the lower part into the anterior edge of the nostril below the anterior lateral cartilage, and above the posterior and inferior lateral cartilage.

b c d A muscle which arises by a small tendon along with the long nasal muscles of the upper lip, and from the musculus canini, or is attached to it by a membranous tendon which runs over the nerves 1123: it is inserted into the wing of the nostril, but chiefly into the concha narium, or pituitary membrane which incloses the concha narium inferior; *b* its origin; *c* the fleshy part which goes to be inserted into the concha narium; at *d* those few fibres are cut away which were inserted into the wing of the nose; it is inserted into the ala nasi fleshy all the length of its inferior edge.

d d Orbicularis oris.

e Canini, the elevators of the corners of the mouth.

f The masseter.

g g h The temporal muscle; *g g* its origin; *h* its insertion into the coronary process of the under jaw bone.

i Part of the membrana pituitaria. See table the sixth, x.

k The ala narium.

l The eye-ball; *k* the pupil, *l* the iris.

m n n Musculus ciliaris; *m* its origin.

o The elevator of the eye-lid, so thin and transparent that the white part of the eye is seen through it, and the tunica adnata, or conjunctiva, which lies under it, as well as the tendon of the straight muscles of the eye.

1129 Nervus maxillaris superior, the second branch of the fifth pair of nerves; 11 branches going to the upper lip; 2 a branch which goes to the inside of the nostril towards the tip of the nose; 3 a branch which goes to the long nasal muscle of the upper lip.

3 Branches of the nervus maxillaris inferior; they are branches of the third branch of the fifth pair of nerves; and accompanied with an artery from the temporal artery which communicates with the arteria angularis; the nerve also communicates with the nervus maxillaris superior.

4 Arteris angularis.

5 Vena angularis.

case for the extending muscles from their originations down to the carpus, and confines them steady in their proper places; there lies protuberating under it, at *a b c d e f*, the extensor carpi radialis, of which *b e d* mark the fleshy part; *e f* the tendinous, which is inserted at *f* into the metacarpal bone; at *g* the musculus protuberans, which is analogous to the extensors of the thumb in the human body, and at *h* the extensor digitorum communis of which *h* is the fleshy part; *i* the tendon.

k l m The tendon *k* inserted at *k* into the coffin bone; at *l m* into the great pastern or first bone of the finger.

n n Ligaments which confine the tendon of the extensor digitorum communis down to the great pastern, which is analogous to the first bone of the finger in the human subject: they are sent from the interosseus, &c.

o p An expansion which arises from the external articular ligament betwixt the humerus and cubit and from the olecranon; it receives an addition from the longus minor and then descends over the bending muscles to form the ligaments on the carpus to which it is attached, as well as to the bones of the cubit on each side of the bounds of the bending muscles; there lies protuberating under it at *o*, the flexor carpi radialis; and at *p* flexor carpi ulnaris.—It forms the ligament which binds down the tendons of the bending muscles on the carpus, and descends more than half way down the splint bones, then degenerates into a membrane, and joins the ligament which arises from the sesamoid bones.

q r Vena cephalica; it arises from under the hoof and falls into the jugularia.

s s Vena plantaris.

t Nervus which go to the integuments.

u A ligament proper to the tendon of the extensor digitorum communis, inserted, at two protuberating parts of the radius, on each side the channel in which the tendon lies.

w x y y A ligament whose fibres run in a transverse direction over the anterior part of the carpus, to which the carous membrane adheres at *w*, and the bursal ligament which lies under it about *x*; it seems to arise from the fascia which covers the bending muscles on the cubit, and the articular ligaments protuberating under it at *y y*.

z z The articular ligaments of the fetlock joint.

g A substance resembling the villous surface of a mushroom, arising from the coffin bone, received by the like substance arising from the hoof, which it mutually receives.

In the lower Limb.

a Part of the glutens externus.

b b b c d Glutens medius; *b b b* its origin from the tendinous surface of the stero-lumbalis; *c* its origin from the ilium.

e f g h i k Musculus fascia lata; *e* the posterior fleshy belly; *f* the fleshy part lying betwixt the two fleshy bellies; *g h i k* the broad tendon; at *g* it is covered by the fascia lata, which, in this place, is inseparably united with it, but ceases to adhere to it between *g* and *h*, where it is cut off; at *i* the tendon of this muscle is inserted into the tibia; at *g* the vastus externus protuberates; at *h* the patella; and betwixt *h* and *i* is the external anterior ligament which binds the patella to the tibia.

l m n o p q r s t Biceps cruris; *l m* the anterior fleshy part, which is inserted into the patella near *m*, and by a strong tendon *m* into the tibia at *n*; the part *m* lies under the flat tendon of the middle part *a*, which joins the flat tendon of the musculus fascia lata; *o* the middle part of this muscle going to be inserted into the anterior and superior ridge of the tibia, and the tendon of the anterior part running from the patella to *i*; *p q r s t* the tendon of the posterior part of this muscle, which is inserted at *s s* into the anterior ridge of the tibia, and under which protuberates, at *p*, the extensor longus.

u v w x y z 122 The tendon of the extensor longus digitorum pedis, of which *p* is the fleshy belly; and *u v w x y z* the tendon inserted at *u* into the coffin bone, and at *w* into the great pastern or first bone of the toe; *s* the place where the fasciae are cut off which join in with this tendon; at *y* the tibialis anticus protuberates under the tendon of the biceps cruris, of which *g* is the fleshy part, and *z* the tendons protuberating under the ligaments; at *r* the peroneus protuberates, of which *r* is the fleshy part, and 22 the tendon which joins in with the long extensor of the foot.

3 Extensor brevis digitorum pedis arises tendinous from the upper part of the anterior protuberance that stands forwards from the calcaneum, and soon becoming fleshy is inserted fleshy and tendinous into the tendon of the long extensor digitorum pedis a little above that tendon's being joined by the peroneus.

4 A ligament common to the extensor longus digitorum pedis and tibialis anticus; it receives a little of the insertion of the biceps cruris into its superior edge internally; the part 4 is the strongest part of it: it arises from the tibia close to the insertion of the flat tendon of the biceps with which it is united; its fibres run obliquely downwards and outwards from the internal edge of the tibia to the external.

6 The salivary duct.
7 The anterior cartilage of the outer ear.
8 The outer ear.

In the Neck.

a b Sterno-thyroideus; *a* its origin from the sternum internally; its insertion is into the thyroid cartilage.

c d Caracolyoides; *c* the flat membranous tendon coming from its origin from the upper and internal side of the humerus, betwixt the insertions of the subscapularis and teres major: it is inserted into the os hyoides; *d* the fleshy part; it is attached to the anterior part of the trapezius, which prevents its starting into a right line when the neck is curved: it has an attachment to the rectus anticus major, or *e* its origin by a flat tendon along with its insertion from the os sphenoides.

f Scalenus; it arises from the transverse processes of the fifth, sixth, and seventh vertebrae of the neck, and is inserted into the first rib.

g g The inferior part of the transversalis cervicis: it arises from the transverse processes of eight of the superior vertebrae of the back, and from the fascia betwixt that and the broad tendon of the complexus, &c. by fleshy fibres: it is inserted into the transverse processes of the four inferior vertebrae of the neck partly fleshy, but chiefly by broad thin tendons, as *g g*.

h The superior part of the transversalis cervicis, which arises from the third, fourth, fifth, sixth, and seventh oblique processes of the neck, and the two uppermost of the back, viz. beginning at the lower oblique process of the third and at the uppermost of the fourth, and so of the rest. It is inserted into the transverse process of the first vertebra.

i Part of the trachelo-mastoideus, complexus minor, or mastoideus lateralis, which arises from the oblique processes of the third, fourth, fifth, sixth, and seventh vertebrae of the neck, the uppermost of the back, and transverse processes of the second and third vertebrae of the back. It is inserted tendinous into the root of the processus mastoideus.

k Arteris carotis.

l Part of the jugular vein.

In the Trunk.

a b c Musculus in summo thorace situs, arises at *a* from the first rib, and is inserted into the sternum about the root of the cartilage of the fourth rib; at *b* the edge *a* joins in with the rectus abdominis of which this muscle seems to be a continuation.

f f g g h h i i Serratus minor posticus; *f f g g* the broad tendon by which it arises, cut off at *f f* to show the glutens medius; *g g h h* the fleshy part, beginning at *g g*; *i i i* the flat tendons by which it is inserted into the ribs: its first insertion is into the fifth rib. In some subjects this muscle runs fleshy under the serratus major posticus, and is inserted into the ribs from the fifth to the fourteenth.

F F G The serratus minor anticus arising from the sternum and cartilages of the four superior ribs at *F F*.

h h i l m m, &c. Serratus minor posticus; *h h i l* its broad tendon, cut from the tendon of the latissimus dorsi at *h h*; *l l m m*, &c. the fleshy part, inserted into the ribs at *m m*, &c. it is, in some subjects, inserted into eight inferior ribs, in others only into seven.

k Supra-spinatus scapulae.

l Infra-spinatus scapulae.

n n p Longissimus dorsi; *n* the strong thick part of its tendinous surface; *o* the thin part of its tendinous surface, through which the fleshy fibres make some appearance; *p* its superior tendon, inserted into the transverse process of the seventh vertebrae of the neck.

q r s t Sacro lumbalis; *q* the part arising by a small tendon along with the longissimus dorsi; *r* its uppermost insertion into the transverse process of the seventh vertebrae of the neck; *s* its insertion into the first rib; *t* that into the second.

g g, &c. *z z*, &c. 11, &c. 22, &c. The external intercostals; *g g*, &c. *z z*, &c. the anterior part over which the external oblique muscle of the abdomen runs without adhering; *z z*, &c. 11, &c. the part to which the external oblique muscle adheres, which is about as extensive as its origin from the ribs; 22, &c. the parts which lie above the adhesion of the oblique muscle of the abdomen.

33, &c. Fleshy fibres which arise partly externally, tendinous, but chiefly fleshy, and run in a transverse direction from one rib to another.

44, &c. Parts of the internal intercostals.

55667 Obliquus internus, or ascendens abdominis; 55 its origin from the spine of the ilium, tendinous, and fleshy: its origin is continued to the ligamentum fallopii; it is also continued from the said ligament and symphysis of the os pubis; 66 its insertion into the cartilage of the lower rib partly tendinous: it is likewise inserted into the cartilaginous endings of the ribs as far as the cartilago anastomiosa.

889 Some appearance of the transversalis abdominis.

1010, &c. Some branches of the nervi lumbares.

- 11 A branch of the external branch of the outer iliac artery, accompanied by 12.
 12 A branch of the external branch of the outer iliac vein.
 13 18, &c. Branches of the arterie intercostales inferiores.
 14 14, &c. Branches of the arterie intercostales superiores.
 15 15, &c. Branches of the arterie lumbares.

In the Shoulders and upper Limbs.

- A Nervus musculo-cutaneus.
 B Nervus medianus.
 C Nervus cubitalis.
 D Nervus radialis.
 E Nervus axillaris.
 F Vena axillaris.

a b c Subscapularis, which is outwardly tendinous; *a* marks the place where the membranous tendon is cut off, by which the supra-spinatus receives some origin from the surface of this muscle; *b* marks a tendinous slip sent from this muscle which leaves it about *a*, and is inserted into the processu coracoides; it serves to guard some vessels which pass under it.

d e The internal part of the pectoralis, coming at *d* from its origin from the aponeurosis of the external oblique muscle of the abdomen; *e* its insertion into the head of the os humeri.

f g h Triplex brachii; *f* the head called extensor longus, arising from the inferior costa of the scapula; *g* the head called extensor brevis, arising from the humerus and expansion which covers the extending muscles on the cubit; *h* the part going to be inserted into the ancon.

i l m n Biceps brachii, or rather coraco-radialis; *i* its origin from the processu coracoides scapulae; *l* a fleshy part lying upon the tendon; *l* the external belly; *m* the internal belly; *n* the aponeurosis arising from this muscle which it sends to the tendinous fascia, or covering of the cubit, and tendon of the extensor carpi radialis.

o Part of the brachialis internus: it arises from the neck of the humerus and internal lower part of the scapula; and is inserted into the radius a little below the insertion of the coraco-radialis, but more internally.

p q r s u v w x y Extensor carpi radialis; *p* its origin from the superior external protuberant part of the humerus; *q* some of the part which arises fleshy from the fascia which is extended betwixt the two protuberant parts of the os humeri: it arises above the part *g*, and ligament or fascia from the external ridge of the external condyle all the way up as far as the brachialis internus does not cover: but its most considerable origin is from the anterior part of the external condyle of the humerus; from which place it continues its origin into the great cavity on the anterior and inferior part of that bone, from whence it arises by a very strong tendon, firmly adhering to the tendon of the extensor digitorum communis. The origin of this muscle is as extensive as the originations of the long supinator, radialis longus and brevis in the human body: it appears to be a combination of all the three; it is assisted by the biceps, the fascia of which is like a strong flat tendon inserted into this muscle; *r s t* the fleshy part; *u v* the tendon inserted into the metacarpal bone at *w*; about *x* it adheres to the dorsal ligament; *y* marks the place where the fascia, proper to the extending muscles on the cubit, is cut off from the fascia of the biceps muscle *u v*, which it joins, to be inserted, along with it, into the tendon of this extensor carpi radialis.

z z A ligamentous fascia.

12345666 Extensor digitorum communis; *b* the fleshy belly which arises from the external condyle of the humerus, the upper and lateral part of the radius and fascia which covers the extending muscles on the cubit; but its principal origin is by a strong flat tendon from the anterior part of the external condyle of the humerus; from which place it continues its origin into the great cavity on the anterior and inferior part of that bone called its anterior fossula above its articulation with the radius; it lies under the extensor carpi radialis, to the tendon of which it adheres for about three minutes from its beginning as well as to the dorsal ligament which lies under it: 22345666 the tendon; 3 the part which is inserted into the coffin bone; 4 the insertion of a slip of this tendon, along with the tendon of the extensor minimi digiti, into the great pastern, externally; 5 the insertion of a slip of this tendon into the great pastern internally; 66 the insertions of the ligaments into this tendon, which bind it down to the great pastern.

778 The muscle which is analogous to the extensors of the thumb in the human body; 77 the fleshy part arising from the lateral part and ridge of the radius; 8 the tendon going to be inserted into the internal splint: it is a combination of the abductor pollicis manus, extensor longus and brevis, pollicis manus, and indicator.

9 Flexor carpi radialis, arises from the inner condyle of the humerus and is inserted into the internal splint bone.

10 Flexor carpi ulnaris internus; that part of it which arises from the internal protuberance of the humerus.

n

THE NINTH ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE, VIEWED IN FRONT, EXPLAINED.

In the Head.

a The anterior dilator of the nostril.

e f The short nasal muscle of the upper lip.

g g The orbicular muscle of the mouth.

h h i i k Caninus, or the elevator of the corner of the mouth: *h h h* its origin from the upper jaw bone; *i i* its insertion into the buccinator; *k k* its insertion into the orbicularis oris.

l l m Part of the buccinator: it arises from three different places: the superior fibres arise from the alveoli of the upper jaw; the middle fibres from the ligamentum inter maxillare, and the inferior ones from the lower jaw: it is inserted into the glandular membrane of the inside of the cheek and lips; and at *m* into the orbicularis oris.

n o p The globe, bulb, or ball of the eye; *n* the pupil; *o* the iris; *p* the white of the eye, or tunica sclerotica, covered with the albuginea, or tendons of the straight muscles only.

q One of the lachrymal glands placed in the great canthus of the eye, called caruncula lachrymalis, and glandula lachrymalis inferior.

r The semi-lunar fold, formed by the conjunctiva.

s Attollens; it arises from the bottom of the orbit near the foramen opticum, from the elongation of the dura-mater by a short narrow tendon, and is inserted into the tunica sclerotica forming the albuginea.

t Deprimens; it arises and is inserted as the attollens, only the attollens is on the superior, and the deprimens on the inferior part of the globe.

u Adductus; it has its origin betwixt the attollens, and deprimens, and is inserted betwixt them lying on the internal side of the globe: its tendon is joined by the attollens above, and deprimens below; and on the external side of the globe, these two muscles are joined in like manner before they reach the cornea, by the adductus; these four straight muscles altogether forming the tunica albuginea, are inserted into the tunica sclerotica near the edge of the cornea luidis.

v Obliquus inferior.

w x y Nervi maxillares superiores; they are branches of the third branch of the fifth pair of nerves; *x* branches which go to the upper lip; *y* a branch which goes to the inside of the nostril towards the top of the nose; *z* a branch which goes to the long nasal muscle of the upper lip.

- 1 Arteria angularis.
- 2 Vena angularis.
- 3 The anterior cartilage of the outer ear.
- 4 The outer ear.

In the Neck.

a b Sterno-thyroideus, arising at *a* from the superior and internal part of the sternum fleshy, it becomes tendinous in about half its ascent up the wind-pipe, from which tendon the sterno-thyroideus arises; it soon becomes fleshy again and is inserted into the thyroid cartilage.

c Trachea arteria, superior arteria, or wind-pipe.

d e f g h Longus colli; *d* the part which comes from its inferior origin, which is from the lateral parts of the bodies of the five uppermost vertebrae of the back and the lowest of the neck, and from the transverse processes of the sixth, fifth, fourth, and third vertebrae of the neck; it is inserted at *g* into the anterior oblique process of the sixth vertebra of the neck, and into the bodies of the fifth, fourth, third, and second, laterally, near the transverse processes, and into the anterior eminence or tubercle of the body of the first vertebra of the neck.

i k l Inter-transversarii posteriores colli; they arise from the roots of the oblique processes, and betwixt them and the transverse processes; also from the posterior part of the transverse processes of the four inferior vertebrae of the neck, and the uppermost of the back: they are inserted into all the transverse processes of the neck, except the first and last, though the oblique capitis inferior seems to be a muscle of the same kind.

m Nerves coming from betwixt the sixth and seventh vertebrae of the neck, betwixt that and the first of the back, and betwixt the first and second of the back: they form the brachial nerves.

n Arteria carotis.

o Part of the vena jugularis.

p Part of the vena cephalica, where it falls into the jugularis.

In the Trunk.

a Semi-spinalis dorsi, arises fleshy from the tendinous surface of the longissimus dorsi: it is inserted into the spines of the ten superior vertebrae of the back: and communicates with the spinalis

12 Vena cephalica, it arises from under the hoof (where it is called vena plantaris) and falls into the jugularis.

13 13 The dorsal ligament, belonging to the anterior part of this joint.

14 14 The articular ligaments of the carpus.

15 15 The articular ligaments of the fetlock joint.

16 Vena plantaris.

In the lower Limbs.

a b b b d Gluteus medius; *b b b* its origin from the tendinous surface of the sacro-lumbalis; *c* its origin from the ilium; *f* near *d* it is inserted into the great trochanter of the thigh bone.

e f g Vastus externus; *e* its principal fleshy part, inserted at *f* into the patella; *g* the thin fleshy part, inserted into the external lateral ligament of the patella.

h i k Tibialis anticus; *g* its origin from the superior, and anterior part of the tibia; it arises also by a very strong tendon from the inferior part of the os femoris into which the fleshy part, arising from the tibia about *g*, is inserted, having first run down about one third of the length of the tibia, after which insertion fleshy fibres arise from this tendon and run obliquely downwards and inwards: the internal surface of this muscle, which is externally tendinous and arises from the tibia, sends off fleshy fibres obliquely downwards and outwards, which form a belly about twice as thick as those from the external tendon, which they meet, and with it form the tendon *h*, which is inserted into the superior and anterior edge of the metatarsal bone, and into the ossa cuneiformia: the external tendinous surface of this muscle, which arises from the os femoris, divides about the bottom of the tibia into two parts *i* and *k*, which serve as ligaments to keep the tendon *h* from starting from the tibia when this joint is bent: the part *i* is inserted into the lesser cuneiform bones of the tarsus, posteriorly running over the internal articular ligament as far back as the posterior edge of the splint bone; and the part *k* is inserted into the os cuboides: it divides for the passage of some vessels, and then unites again.

l m n o p q r s t t Extensor longus digitorum pedis; *l* its origin from the os femoris along with the strong tendon of the tibialis anticus, to which it is inseparably joined near its origin: it arises also from the tibia: *m* its fleshy belly; *n n* its tendon, joined at *o* by the tendon of the peroneus; with part of which it sends off a slip to be inserted into the first bone of the toe, or great pastern at *p*; at *q* it is joined by the fascia, which are here cut off, and sends with them a slip which is inserted into the great pastern at *r*; *s* the principal part of the tendon going to be inserted into the coffin bone; *t t* the insertions of the ligaments into this tendon, which bind it down to the great pastern.

u u Extensor brevis digitorum pedis.

w x x Peroneus; it arises from the external articular ligament, which runs from the external condyle of the femur down the fibula, and from the fascic or tendinous covering of the flexor digitorum pedis; *u u* its fleshy belly; *x x* its tendon, which joins in at *c* with the tendon of the extensor longus digitorum pedis.

y Tibialis posticus, arises from the external side of the posterior part of the head of the tibia, and from the tendinous surface of the flexor digitorum pedis; the tendon of which muscle it joins in with, after running through a groove on the internal side of the heel.

z The tendon of the gemellus.

1 The tendon of the plantaris.

1 Arteria tibialis anterior.

2 Vena saphenea.

3 Vena plantaris externa.

4 Vena plantaris interna.

5 A ligament proper to the extensor longus digitorum pedis.

66 A dorsal ligament.

78 Articular ligaments.

9 The interosseus, &c. it is like a strong ligament arising from some of the tarsal bones, and the upper part of the metatarsal bones; and is inserted into the sesamoid bones of the fetlock joint, and upper parts of the great pastern on each side, and sends off the ligaments 10 10 to the tendon of the extensor longus digitorum.

cervicis as well as the fleshy fibres of the spinalis dorsi, before its insertion into the superior parts of the spines, the spinalis dorsi being inserted below it.

b b c d e f g h Longissimus dorsi; it arises at *b b* from the posterior spine of the ilium, and at *c* by a strong aponeurosis from the three uppermost spinal processes of the os sacrum, from all those of the loins and seven or eight of the back; this aponeurosis, or tendinous surface, is very strong near the spines as at *d*, but diminishes in thickness so as to show the carnosus fibres through at *e*: it arises also fleshy from the inside of the ligament which binds the posterior part of the ilium to the transverse processes of the os sacrum, and from all the anterior side of the ilium which is behind the transverse processes of the os sacrum, and is inserted into the whole length of the inferior edges of the transverse processes of all the vertebrae of the loins, into the inferior or lower convex edges of about seven of the inferior ribs, betwixt their articulations and the sacro-lumbalis; the insertion into the lowest is about nine minutes broad, the insertions into those above, diminish gradually in breadth till they come to the seventh or eighth, where they end in a point: the sacro-lumbalis in those above lying close up to the transverse processes of the vertebrae of the back. It is inserted, by distinct tendons, into all the transverse processes of all the vertebrae of the back, and ligaments of the true ribs, and at *g* into the transverse process of the seventh vertebra of the neck; *b b f h* show the carnosus origin of the gluteus medius from the tendinous surface of this muscle.

i k l m n o p q r s t Sacro-lumbalis; *i* the part which, in this subject, arises from or along with the longissimus dorsi; it receives origin from the superior edges of all the ribs, except two or three of the uppermost, by flat tendons about half the breadth of the muscle, and is inserted, by distinct flat tendons, into the lower convex edges of all the ribs except two or three of the lowest, as at *l l l l l l*, and into the transverse process of the seventh vertebra of the neck at *t*: each of these tendons run upon the surface of the muscle, going over about three ribs below its insertion.

u o p p p Levatores costarum; *u o o* that which arises at *u* from the transverse process of the seventh vertebra of the neck, being inserted into the first rib at *o o*; it is sometimes called one of the scaleni: *p p p* those which arise from the transverse processes of the back, and the neighbouring ligaments, each being inserted into the back part of the outside of the rib below its origin.

q r r r, &c. The external intercostals; they arise at *q q* from the inferior edge, and a little of the outside of each rib, the last excepted, are a little tendinous, and, descending obliquely downwards, are inserted at *r r* into the upper edge and from a small portion of the outside of each rib, the first excepted.

s t t, &c. The internal intercostals, they arise at *s s* from the superior edge only of the bony part of each rib, except the first, not covering any of the outside, and from the edges of the cartilages of the ribs, and a considerable part of the outside of the cartilages: they are, chiefly externally, tendinous, but partly fleshy, and ascending obliquely upwards, and forwards, are inserted into the lower edges of the bony parts of the ribs, and into the edges and part of the outsides of their cartilages, the last excepted.

u u u u x y y Transversalis abdominis; the part *u u* arises from the inside of the ribs below the triangulus of the sternum and diaphragm by fleshy digitations; the part *x* arises tendinous from the transverse processes of the thorax or four uppermost vertebrae of the loins, by an aponeurosis, or tendinous plain, and fleshy from the internal labium of the crista of the ilium, and a great part of the ligamentum fallopi, or tendinous margin of the internal oblique of the abdomen, and is inserted into the ansiform cartilage and linea alba, adhering to the posterior plate of the aponeurosis of the internal oblique muscle of the abdomen at its first passing under the rectus. The lower part of the aponeurosis of the transversalis is separated from the upper in a transverse direction, from the edge of the rectus to the linea alba, about half way betwixt the navel and synchondrosis of the pubis, the upper part going behind the rectus, and the lower before it and the pyramidalis, if there is any; at *z*, from the spine of the ilium, arises an aponeurosis common to this muscle, with the lower posterior serratus and internal oblique, cut off at *z*, where it joins the serratus, and *y y* where it joins the internal oblique.

z The elevating muscle of the tail.

1 The lateral muscle of the tail.

22 The inter-transversal muscles of the tail.

3 The depressing muscle of the tail.

The origins and insertions of the muscles of the tail are shown in the next table.

4 Branches of the nervi lumbares, coming out of the sacro-lumbalis, which run over the gluteus medius to go to the integuments.

55, &c. Branches of the nervi costales, lying upon the transversales, which go to the abdominal muscles and integuments.

6 Branches of the nervi lumbares which go to the abdominal muscles and integuments.

7 Small arteries coming out of the sacro-lumbalis to go to the gluteus medius.

88 Arteries from the intercostales inferiores.

99, &c. Branches of the arterie intercostales superiores.

10 The external branch of the outer iliac artery in two ramifications, accompanied by 11.

11 The external branch of the outer iliac vein, in two ramifications.

In the Shoulders and upper Limbs.

a b d e Sub-scapularis; it arises from all that space of the inner or concave side of the scapula, betwixt the insertion of the serratus major anticus and near its neck, and from this situation it has its name: it is thick and made up of several penniform portions: *a* the part above the superior costa of the scapula, where there is yet remaining a part of the flat tendon by which the supra-spinatus receives some origin from the tendinous surface of this muscle; *b* the part below the inferior costa of the scapula, which is externally tendinous; *c* marks a tendinous slip sent from this muscle, which leaves it about *d*, and is inserted into the processus coracoides: it serves to guard some nerves which pass under it: this muscle is inserted at *e* into the head of the os humeri, which insertion is continued down to the insertion of the teres major.

f g h Teres major; *f* its origin from the inferior costa of the scapula; *g* the part which is externally tendinous, going to be inserted into the humerus.

i l l m n o Longus minor; *i l l m* its broad tendon by which it begins, at *i* from the inferior angle of the scapula, and at *k* from the tendinous surface of the teres major: *l l* the beginning of its fleshy fibres, which become tendinous again at *m*, and are inserted into the inside of the ancon; at *n* may be seen, through the flat tendon of this muscle, the tendons of the membrana carnea and latissimus dorsi, going to their insertions into the humerus, along with the teres major, to the tendon of which muscle they are inseparably joined; but before their insertion their fibres intersect each other in this manner, viz. the tendinous fibres from that part of the latissimus dorsi which lies over the inferior angle of the scapula, are inserted along with the inferior angle of the tendon of the teres major, running over the fibres of the inferior angle and those of the membrana carnea, which are inserted along with the superior angle of that tendon; at *o* are left some of the carnosous fibres of the longus major, which was attached to, or received some origin from the flat tendon of this muscle.

p q Coraco brachialis; *p* its origin from the processus coracoides of the scapula; *q* its insertion into the humerus.

r s Brachialis internus; *r* the part which arises from the neck of the humerus, and the internal lower part of the scapula; and is inserted at *s* into the radius a little below the insertion of the coraco radialis and more internally.

t Flexor carpi radialis; it arises from the inner condyle of the humerus, and is inserted into the internal splint bone.

u The first head of the profundus or perforans.

w Nervus musculi cutaneus.

s Nervus medianus.

y Nervus cubitalis.

z Nervus radialis.

1 Nervus axillaris.

2 Arteria axillaris.

3 Vena axillaris.

4 Arteria brachialis, or the humeral artery.

5 Vena cephalica.

66, &c. Bursal ligaments.

77, &c. Articular ligaments.

88 Cartilages belonging to the coffin bone.

In the lower Limbs.

a a b Iliacus internus; *a a* Part of its origin which is continued from all, or most of the inside of the os ilium, which lies before the transverse processes of the loins and sacrum, and has some origin from that part of the fascia lata which lies betwixt it and the glutei: it joins in with the psoas magnus from its origin, and is, with it, inserted into the little trochanter of the thigh bone; they seem to be but one muscle.

c d e f g h i Tibialis anticus; *c e* its origin from the superior and anterior part of the tibia; *d* the origin of its strong tendon, *d e g h i*, from the inferior part of the femoris, to which, near its origin, the tendon of the extensor longus digitorum pedis is inseparably attached; about *e* the superior part of the fleshy fibres, which arise at *c e*, are inserted into the inner side of this tendon, after which insertion, fleshy fibres run from the inner side of this tendon obliquely downwards, and inwards, and are met by fleshy fibres arising from the tendinous covering of the internal side of this muscle, which run obliquely downwards and outwards; this fleshy part is about twice as thick as that from the outside tendon, and with it forms the principal tendon *f*, by which it is inserted into the superior and anterior edge of the metatarsal bone, and into the os cuneiformis; *g* the place where the external tendon divides, and is inserted, by the part *h*, into the less cuneiform bone of the tarsus, posteriorly running over the internal articular ligament as far back as the posterior edge of the internal splint bone, and by the part *i* into the os cuboides; at *i* this part divides for the passage of some blood vessels and then unites again.

c s, &c, d d, &c. The multifidus of the spine; *c e* the origins from the upper part of the transverse processes of the vertebrae of the back, and from the oblique ascending processes of the loins, and sacrum; *d d, &c.* the insertions into the spinal processes of the sacrum, loins and back.

e The elevating muscle of the tail, beginning its origin from the inferior or posterior edge of the third spinal process of the os sacrum, which origin is continued from near the end of the spine, about half way towards its root: its origin is continued fleshy from the sides and edges, and interspersed ligaments of the spines of the sacrum, below that from the whole length of the last of them, and is inserted into the first and second oblique processes of the os coccygis by two tendons; it then begins to arise from the spinal processes of the coccyx, and after passing over one, or two, is inserted into the next, or next but one below that. This seems to be a continuation of the multifidus of the spine.

f g h The lateral muscles of the tail or coccyx; *f g* the tendon by which it arises, at *f*, from this spine of the lowest vertebra but one of the loins; *h* the fleshy part: it is inserted tendinous into the oblique process of the coccyx or tail, and into two or three below that, and then joins in with the elevating muscle of the tail.

i The inter-transverse muscles of the tail, arising from the transverse process of one vertebra of the coccyx or tail, and inserted into that of the next, and so on through the whole length of the tail.

There are muscles which arise from the upper, or posterior part of the transverse processes, and are inserted into the oblique processes of the next but one or two below them; they are like the inter-transversarii posteriores of the neck.

A The depressing muscle of the tail, which begins its origin from under the transverse process of the third vertebra of the sacrum, and continues it from the whole length of the transverse processes of the sacrum below that, and from the inter-transverse ligaments, and so on down the tail almost to the last, and is inserted into the bodies of the bones of the tail.

11, &c. The elevators of the ribs.

m Arteria cervicalis.

n The vertebral vein and artery of the neck.

o Arteria carotia communis.

p The trunk of the eighth pair of nerves.

q Part of the jugular vein.

r Arteria mammae interna.

In the Shoulders and upper Limbs.

12344 Sub-scapularis; it arises from all that space of the inner or concave side of the scapula, between the insertion of the serratus major anticus, and near its neck: from this situation it has its name, it is thick and fleshy, made up of several penniform portions; *1* the part above the superior costa of the scapula, which is externally tendinous; *2* marks a tendinous slip sent from this muscle, which leaves it about *3*, and is inserted into the processus coracoides; some nerves and blood-vessels pass under it: this muscle is inserted, at *4*, into the head of the os humeri.

5 Nervus musculo-cutaneus.

6 Nervus medianus.

7 Nervus cubitalis.

8 Nervus radialis.

9 Nervus axillaris.

10 Arteria axillaris.

11 Vena axillaris.

12 Arteria brachialis, or the humeral artery.

13 Vena cephalica.

14 Vena plantaris.

1616 Ligaments which bind together the bones of the carpus.

1717, &c. Articular ligaments.

1818 Cartilages belonging to the coffin bone.

In the lower Limbs.

a a Iliacus internus; *a a* part of its origin which is continued from all, or most of the inside of the os ilium, which lies before the transverse processes of the loins and sacrum, and has some origin from the posterior part of the anterior spine of the ilium, and that part of the fascia lata which lies betwixt it and the glutei: it joins in with the psoas magnus from its origin, and is, with it, inserted into the little trochanter of the thigh bone.

b Interosseus, &c.

c Vena tibialis anterior.

d Vena saphenea.

e Vena plantaris externa and vena plantaris interna.

f A ligament which runs from the astragalus to the metatarsal bone.

11 Flexor digitorum pedis.

12 Arteria tibialis anterior.

3 Vena tibialis anterior, in which appear some valves; it is covered by a thin fleshy part of the tibialis from about 1 upwards.

3 The external anterior ligament of the patella, which binds that bone to the tibia.

4 The external lateral ligament, which binds the patella to the external condyle of the os femoris.

5 The external articular ligament, which binds the os femoris to the tibia, and tibia; it runs all the way down the fibula, and to the bottom of the tibia.

6 A bursal ligament, upon which lie mucilaginous glands.

7 The external articular ligament of the tarsus.

8 The internal articular ligament of the tarsus.

99 The articular ligaments of the fetlock joint.

1010 The articular ligaments of the great pastern with the coronary bone.

1111 The articular ligaments of the coronary bone with the coffin bone.

121212 The anterior part of the bursal ligament of the tarsus.

1313 The anterior part of the bursal ligament of the fetlock joint.

1414 The anterior part of the bursal ligament of the articulation of the great pastern with the coronary bone.

15 The anterior part of the bursal ligament of the articulation of the coronary bone with the coffin bone.

1617 Interosseus, &c. It is like a strong ligament arising from some of the tarsal bones, and the upper part of the metatarsal bones, and is inserted into the sesamoid bones, and upper part of the great pasterna; on each side at 1717 are cut off small ligaments, which were inserted into the tendon of the extensor longus digitorum pedis.

1818 Cartilages belonging to the coffin bone.

THE TENTH ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE, VIEWED IN FRONT, EXPLAINED.

In the Head.

a b The glandulous membrane of the inside of the lips; *a* glandulae labiales; *b* glandulae buccales.

c The concha narium inferior, covered by the pituitary membrane.

d e f g The four recti muscles, or muscoli recti of the eye; of which *d* is called atollens, *e* depri-mens, *f* adducens, and *g* abducens: these muscles arise from the bottom of the orbit near the foramen opticum, in the elongation of the dura-mater, by short narrow tendons, in the same order as they are inserted into the tunica sclerotica, near and at the edge of the cornea lucida; the flat tendons, before they reach the cornea lucida, join and form the tunica albuginea, or white of the eye.

h Obliquus inferior.

i Musculus semispinosus oculi suspensorius, arises from the margin of the foramen opticum, and is inserted (being divided into several fleshy portions) into the posterior part of the sclerotica, below the terminations of the musculi recti.

k Arteria angularis.

l Vena angularis.

m The middle portion of the cartilage of the nose: it is a broad cartilaginous lamina, joined by a kind of symphysis to the anterior edge of the middle lamina of the os ethmoides, to the anterior edge of the vomer, and to the anterior part of the groove formed by the ossa maxillaria, as far as the nasal spines of these bones: this lamina completes the septum narium, of which it forms the principal part.

n o The part *o* is but a continuation of the part *n*, which, both together, form the lateral cartilage of the nose: they are continuations of the middle cartilages.

p q r Nervi maxillares superiores; they are branches of the third branch of the fifth pair; *p* branches which go to the upper lip; *q* a branch which goes to the inside of the nostril towards the tip of the nose; *r* a branch which goes to the long nasal muscle of the upper lip.

s The anterior cartilage of the outer ear.

t The outer ear.

In the Neck and Trunk.

a b Inter-vertebrales; they arise from the ascending processes, and form the space between the oblique processes of the uppermost vertebrae of the back: they are inserted into the lateral part of the body of the vertebra above its origin.

g g, &c. Articular ligaments.

h The outer semi-lunar cartilage in the joint of the knee.

i i Cartilages belonging to the coffin bone.

THE ELEVENTH ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE, VIEWED POSTERIORLY, EXPLAINED.

In the Head.

A The outer ear.

a b Muscles running from the anterior cartilage to the external ear.

12 Retrahens; the posterior part *1* arises under the part *2*, and is inserted into the ear near the inferior muscles of the outer ear, or the depressor; the part *2* arises from the ligamentum colli and occiput, and is inserted into the convex part of the outer ear.

c The superior lateral muscles of the outer ear, which arises under the lateral muscle of the anterior cartilage, and is inserted into the inferior angles of the openings of the ears anteriorly.

d The lateral muscle of the anterior cartilage of the outer ear, which arises from above the orbit of the eye, and is inserted into the anterior cartilage.

3 The inferior lateral muscle or depressor of the outer ear: it arises from the quadratus colli, and is inserted close by the lower angle of the opening of the ear posteriorly.

e The orbicular muscle of the eye-lids, which arises from the ligament by which the conjunction of the eye-lids, in the great canthus, is tied to the nasal part of the os unguis.

4456 Part of the latissimus colli, inserted about *5* into the lower jaw; at *6* the parotid gland protuberates under the latissimus colli.

f The globe or ball of the eye.

g h Depressors of the lower lip, chiefly covered by the quadratus colli.

i i i The orbicular muscle of the mouth.

A The elevators of the chin, where they are inserted into the skin, the fibres of which are inter-mixed with the fat of the chin.

i Caninus, or the elevator of the corner of the mouth.

m Zygomaticus; its origin is from the orbicularis of the eye; and its insertion into the orbicularis of the mouth.

n The lateral dilators of the nostril and upper lip.

o The digastric muscle of the lower jaw; the quadratus colli covers this part, and immediately under it the mylohyoides lies.

p The inferior maxillary glands.

q Vena angularis, a branch of the external jugular vein.

In the Neck, Shoulders, and Trunk.

a b c Levator humeri proprius; *a* the portion which arises, under the part *b*, from the transverse processes of the four uppermost vertebrae of the neck; *b* the part which arises from the processus mastoideus, tendinous, and by a tendinous membrane from the pole bone or ridge of the occiput; these two heads unite before they pass over the head of the humerus, and are inserted into that bone along with the transverse or superior part of the pectoralis, between the biceps and brachii internus: the first part both the same origin as the angularis, called levator scapulae proprius in the human body; the second has its origin much like the anterior and superior part of the trapezius, which, in the human body is inserted into the clavicle, but the clavicle being wanting in a horse it is inserted into the humerus, and the angularis into it.

d e f The superior part of the trapezius, under which, at *d*, the splenius protuberates; at *e* the serratus major anticus; at *f* the rhomboideus.—To this muscle the part, as above, called levator humeri, which arises from the bones of the head, belongs.

g The mane.

h i l l m m n n o p q Membrana carnea; *h* the inferior part of the trapezius lying under the membranous part of this fleshy pannicle; *i* the superior fleshy part; *k* a membranous part; *l l m* the posterior fleshy part, which begins at *l l*; *n n o g* the posterior membranous part lies over the obliquus descendens, linea alba abdominalis and part of the serratus major posticus; *p* a large vein, which is spread in the fleshy part of this pannicle. It is attached to the upper edge of the superior part of the pectoralis, and the lower edge of the inferior part; so that they, together, surround the whole limb from the top of the shoulder to the bottom of the fore feet: its lower part goes with the lower part of the pectoralis to be inserted into the humerus, and its upper part with the upper part of the pectoralis down the fore limb: it may be called the most external part of the pectoralis,

the part *xy* lies under a fascia sent from the anterior part of the posterior head to the tendon of the musculus flexor latissimus: *z* 12 4 4 5 the fleshy part of the posterior head, where it does not arise from the fascia lata; 7 3 4 4 5 6 8 9 10 11 12 13 the tendon of the posterior head, which joins the tendon of the anterior head near the patella, and is likewise inserted into the anterior part of the tibia all the way down to the ligament common to the extensor longus digitorum pedis, and tibialis anticus, and into part of the upper edge of that ligament; 5 6 is the strongest part of this tendon; it joins with a production of the fascia lata, and is inserted into the os calcis; there lie protuberant under this tendon, at 9, the extensor longus digitorum pedis, at 10 the peroneus, at 11 the flexor digitorum pedis, at 12 the soleus, and at 13 the gemelli.

14 15 16 17 Semi-tendinous; 14 its origin from the ligament running from the spinal to the transverse processes of the os sacrum, and from thence to the ischium; 14 15 16 mark the part where it receives carnosous fibres from the fascia lata; 15 16 17 the fleshy part where it does not arise from the fascia lata; 17 the tendinous production which wraps over the gemelli to join in with the fascia lata, and tendon of the biceps cruris: it sends off an expansion which is attached to the tendinous ligament which lies over the gemelli, and covers some blood-vessels and nerves which pass over the gemelli and run down the leg, and are marked 14 in table the second at the heel: it is also inserted by a flat tendon, or expansion, into the plantaris near the bottom of the fleshy part; through which expansion there is an opening for the passage of a large nerve: its principal insertion is by a flat tendon into the superior and anterior part of the tibia internally, marked *A* on the left lower limb in table the second.

18 19 19 20 The gracilis: 19 19 the part coming from its origin, which is from the edge of the inferior branch of the os pubis near the symphysis by a broad and very short tendon, from thence the fleshy fibres run down to the internal condyle of the os femoris, where they terminate in a thin tendon, which afterwards degenerates into a kind of aponeurosis, and is inserted into the fore part of the inside of the head of the tibia; and from thence it is continued almost to the bottom of that bone, and the posterior part is attached to the tendinous surface of the flexor digitorum pedis.

21 7 8 A part of the fascia lata, &c. which is left remaining, the rest being cut away before its attachment to the tendons of the biceps, and semi-tendinous: they cover the tendon of the gemelli, and are inserted into the inner side of the os calcis with a tendinous production of the plantaris: these fasciae are inserted into the edges of the principal tendon of the plantaris, but most strongly into the external edge: the fascia, along with the tendinous production of the plantaris, being united, divide into two almost equal parts (or if they are continued into each other it is by what is membranous) the external is inserted into the external edge of the plantaris as it passes over the calcaneum: the internal portion partly into the said tendon opposite to the other, but chiefly into the internal side of the calcaneum close to the origin of the aponeurosis plantaris.

22 23 24 25 26 The tendon of the plantaris coming from under the tendons of the fasciae and twisting over the tendon of the gemelli at 22; at 26 it divides for the passage of the tendon of the flexor digitorum pedis. The part 22 23 belongs to that part which is analogous to the plantaris in the human body, and inserted into the heel; and the part 23 24 25 26 is analogous to the short flexor of the toes arising from the heel or protuberance of the calcaneum, but in a horse they are continued one into the other.

27 The tendon of the flexor digitorum pedis of which 11 is the fleshy portion, lying partly under the broad tendon of the biceps cruris.

28 29 The tendon of the peroneus, of which 10 is the fleshy part lying under the broad tendon of the biceps cruris.

30 The tendon of the extensor longus digitorum pedis; of which 9 is the fleshy part lying under the broad tendon of the biceps cruris.

40 Extensor brevis digitorum pedis.

41 42 Tibialis posticus; 41 its fleshy belly lying under the flat tendons of the sartorius and gracilis; 42 the tendon going to join in with the tendon of the flexor digitorum pedis.

43 Popliteus, lying under the tendons of the sartorius and gracilis.

44 Some of the fleshy part of the flexor digitorum pedis, of which 27 is the tendon.

45 Nerves which make some appearance under the tendon of the biceps cruris, going to the tibialis anticus, &c. they are branches of the small sciatic ramus, or sciaticus externus, called likewise sciatico-peroneus.

46 The external nervus plantaris.

47 The internal nervus plantaris.

48 Arteria plantaris externa.

49 Vena plantaris externa.

50 Vena plantaris interna.

51 A ligament which runs from the tibia to the os calcis, it lies over the tendon of the peroneus.

52 The external articular ligament, which is inserted above into the tibia and below into the astragalus, and os calcis.

53 A ligament which binds together the bones of the tarsus and metatarsus inserted externally above into the os calcis, and below into the splint or external imperfect metatarsal bone.

the back, and from the fascia betwixt that and the broad tendon of the complexus, &c. by fleshy fibres: at *klm* it is inserted into the transverse processes of the four inferior vertebrae of the neck, partly fleshy, but chiefly by broad thin tendons; at *ooo* the inter-transversalis makes some appearance.

pg Trachelo-mastoidemus, complexus minor, or mastoidemus lateralis; *p* the fleshy part: it arises from the oblique processes of the third, fourth, fifth, sixth, and seventh vertebrae of the neck; the uppermost of the back, and the transverse processes of the second and third vertebrae of the back; *g* the tendon going to be inserted into the root of the processu mastoideus.

R *stt* *uu* *uu* Complexus; it is attached by a fascia to the transverse processes of the first and second vertebrae of the neck. It arises from the oblique processes of the third vertebrae of the neck, and from all those of the neck below that, and from the upper oblique process of the first vertebrae of the back, and by a pretty strong, flat tendon from the second and third vertebrae of the back, from the last of which the tendon is reflected to the spinal process of the same vertebra, which makes a communication betwixt this part of the muscle and that arising from the spines of the third, fourth, fifth, sixth, and seventh vertebrae of the back: *r* fleshy fibres arising from the broad tendon; at *R* it arises tendinous from the ligamentum colli; *stt* tendinous lines, by which the fleshy fibres are interposed, which advance towards the tendon *u*; *u* the part which is inserted, by a strong round tendon, into the occiput near its fellow; at *u* are marked the directions of some tendinous threads which attach it to the ligamentum colli.

yz Ligamentum colli; *z* the place where the rhomboideus and the trapezius are cut from their origins.

- 1 Part of the vena jugularis communis.
- 2 Vena jugularis externa anterior.
- 3 Vena jugularis externa posterior, or superior.
- 4 Branches of the cervical arteries and veins going to and coming from the splenius trapezius and integumenta.

In the Trunk.

a, *n*, &c. The serratus major posticus, inserted into the ribs.

bb *ccc*, &c. *dd*, &c. The external inter-costalis; *b* a part to which the external oblique muscle does not adhere; *cc*, &c. the part to which the external oblique muscle of the abdomen adheres, which is about as extensive as its origin from the ribs; *d* the part over which the external oblique muscle of the abdomen runs without adhering.

eee, &c. Fibres which arise partly, externally, tendinous, but chiefly fleshy; and run in a transverse direction from one rib to another.

ff, &c. Part of the internal inter-costalis.

gg, &c. Fleshy fibres which run in the same direction as the external inter-costalis from one cartilaginous ending of the ribs to another.

hi *klm* Obliquus internus or ascendens abdominis: it arises from the spine of the ilium, tendinous and fleshy, which origin is continued to the ligamentum fallopi, from which it arises, and from the symphysis of the os pubis; it is inserted into the cartilages of the lowest rib, tendinous and fleshy, and into the cartilaginous endings of the ribs as far as the cartilago-ensiformis; *A* the fleshy part ending at *i*; at *i* is an opening through which blood-vessels pass to and from the external oblique muscle; *l* the flat tendon; at *m* that part of the tendon of this muscle which runs over the rectus is cut off.

n *o* Rectus abdominis, arises from the os pubis and is inserted into the cartilago-ensiformis, and the cartilages of the tenth, ninth, eighth, seventh, sixth, fifth, fourth, and third ribs near the sternum; and into the sternum betwixt the roots of the cartilages of the third and fourth ribs. There are fleshy fibres arising from the first rib which join it at its origin from the sternum, betwixt the cartilages of the third and fourth ribs.—This is called a distinct muscle and named musculus in summo thorace situs.

- p* The elevating muscle of the tail.
 - q* The lateral muscle of the tail.
 - r* The inter-transverse muscle of the tail.
 - s* The depressing muscle of the tail.
- For a more full explanation of the muscles of the tail, see table the 12th.
- t* The external sphincter ani.
 - u* Acceleratores penis.
 - w* Glands.

—The blood-vessels and nerves which are marked on the thorax, are those which were distributed to the parts taken off, as the obliquus externus, latissimus dorsi, membrana carnosae, &c. and integumenta: the nerves come from the nervi dorsales, or costales, and nervi lumbares; the arteries from the arterie inter-costales inferiores, and the arterie lumbares; the veins from the vena inter-costales and vena lumbares.

54 A bursal ligament.

55 A strong ligament which binds the os calcis to the astragalus, os naviculara, ossa unciformia, and splint or imperfect metatarsal bone, marked 8 9 9 in table the second.

56 57 57 The interosseus, &c. it is like a strong ligament arising from the upper part of the metatarsal bones, and some of the tarsal bones, and is inserted into the sesamoid bones, and first bone of the toe; on each side it sends off the ligaments 57 57 to the tendon of the extensor digitorum pedis.

58 A ligament lying over the tendon of the plantaris: it is inserted into the sesamoid bones on each side of the tendon, to which bones it closely confines the tendon when this joint is bent, but is not attached to it.

59 A ligament arising from the first bone of the toe on each side, and inserted into the middle of the tendon of the plantaris, to which bone it confines the tendon, when this joint is bent.

60 A ligament which binds the tendon of the flexor digitorum pedis down to the second bone of the toe when this joint is bent.

61 A substance resembling the villous surface of a mushroom, arising from the coffin bone, received by the like substance arising from the hoof, which it mutually receives.

THE THIRTEENTH ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE, VIEWED POSTERIORLY, EXPLAINED.

In the Head.

a Glandulae labiales.

bb Musculus caninus.

c Buccinator.

d *e* *f* The depressor of the lower lip: it arises along with the buccinator, and is almost divided into two muscles, one superior the other inferior, for the passage of nerves and blood-vessels to the lower lip; *d* the superior part which arises tendinous, and is inserted fleshy into the lower lip laterally; *e* *f* the inferior part which arises fleshy and is inserted tendinous into the lower lip near the middle; *g* the fleshy belly; *f* the tendon.—The part *d* is the depressor of the corner of the mouth, and the part *e* *f* the depressor of the lower lip, but the part *d* is covered by the blood-vessels and nerves which go to the chin.

ggg *h* The orbicular muscle of the mouth. *ii* The elevators of the chin. *A* The eye-ball.

ll Musculus ciliaris. *m* Masseter. *n* Branches of the nervus maxillaris inferior: they are branches of the third branch of the fifth pair of nerves, and are accompanied with an artery from the temporal artery, which communicates with the arteria angularis. *ooo* Arteria angularis. *p* Vena angularis.

q The salivary duct. *rs* Vena temporalis. *t* The outer ear.

In the Neck.

a *b* Coraco-hyoideus, coming at *a* from its origin at the upper and internal side of the humerus, betwixt the insertions of the sub-escapularis and teres major, by a flat membranous tendon: it begins to be fleshy as it comes from under the serratus minor anticus: *b* its insertion into the os hyoides: it is attached to the anterior part of the trapezius near its whole length, and above that attachment to the rectus major capitis anterior; or has an origin along with the insertion of that muscle from the os sphenoides by a flat tendon.

c Sterno-hyoideus: it arises from the middle tendon of the sterno-thyroideus, and is inserted into the os hyoides along with the coraco-hyoideus.

d *e* Genio-hyoideus; *e* its origin from the lower jaw, tendinous.—Its insertion into the os hyoides is near *d*.

6 6 7 Diaphragmus; 7 the middle tendon; 6 6 its two insertions into the lower jaw.

ee Obliquus capitis inferior, covered by the fascia by which the complexus is attached to the transverse processes of the first and second vertebrae of the neck: it arises from all the length of the spine of the oblique process of the second vertebra of the neck, and from all the posterior part of that vertebra which the inter-vertebralis does not cover, and is inserted into all or most of the anterior part of the broad transverse process of the atlas, which the inter-vertebralis does not cover.

f Rectus internus major capitis, or rectus anticus longus: it arises from the transverse processes of the third and fourth vertebrae of the neck, and from a part of the longus colli: it is inserted into the os sphenoides.

ghiklmooo Transversalis cervicis; *g* *h* the superior part, which arises from the oblique processes of the third, fourth, fifth, sixth, and seventh vertebrae of the neck, and two of the uppermost of the back, viz. the beginning of the lower oblique process of the third, and uppermost of the fourth, and so of the rest: it is inserted into the transverse process of the first vertebra of the neck; *iklm* the inferior part; it arises from the transverse processes of eight of the superior vertebrae of

In the upper Limbs.

A *B* *C* Triceps brachii: *A* the part called extensor longus; *B* extensor brevis; the long head arises from the inferior costa of the scapula, and the short head from the humerus, they are inserted into the ancon at *C*.

abc Extensor digitorum communis; *a* the fleshy part which arises from the external condyle of the humerus, the upper and lateral part of the radius and fascia which covers the extending muscles on the cubit, but its principal origin is by a strong flat tendon from the anterior part of the external condyle of the humerus, from which place it continues its origin into the anterior fossula, or sinus, which receives the upper head of the radius when the cubit is bent; it lies under the extensor carpi radialis, to the tendon of which it adheres for about three minutes from its beginning, as well as to the bursal ligament which lies under it; *bc* the tendon which is chiefly inserted into the coffin bone: it sends the slip *c* to the tendon of the extensor minimi digiti, to be along with it inserted into the anterior and superior part of the great pastern externally; and another slip which is inserted into the anterior and superior part of the great pastern internally: it likewise sends a flat tendinous slip or aponeurosis to the os orbiculare, and another to the superior part of the metacarpal bone or internal articular ligament near its insertion into that bone: these are analogous to those aponeuroses in the human body, which bind the tendons of this muscle together.

d *e* The tendon of the muscle which is analogous to the extensor minimi digiti in the human body, joined by the slip *c* of the extensor digitorum communis: it arises from the superior part of the radius, from the external part of the ulna for a considerable way down that bone, and from the vagina or case which binds together the bending muscles of the cubit, and is inserted along with the slip *c* into the anterior and superior part of the great pastern externally: this slip, which it receives, is analogous to the aponeurosis in the human body, which binds the tendons of the extensor digitorum together: it sends a slip to the orbicular bone, to which, by that means, it is bound.

efghi Flexor carpi ulnaris: *e* the external head, arising, by the tendon *e*, from the external protuberance of the os humeri posteriorly; *f* the internal head, arising from the internal protuberance of the os humeri: *g* the tendon which divides into two a little below *g*, and is inserted, by the part *h*, into the external splint bone, and, by the part *i*, into the os pisiforme or orbiculare. These heads are two distinct muscles, the one ulnaris externus, the other ulnaris internus; the tendon of the ulnaris externus only is divided, being inserted partly into the external splint bone, and partly into the orbiculare.

K *klm* The profundus: it arises by four distinct heads, the most considerable of which, marked *K*, arises from the internal protuberance of the os humeri posteriorly under and in common with the sublimis, with which it seems to be confounded, in some degree, all the way down the fleshy part till it comes to the tendon, where the four heads unite, and then the profundus and sublimis make two distinct tendons: the second head arises under the first, from the same protuberance, by a small flat tendon, which soon swells into a round fleshy belly, then, gradually tapering, becomes a round tendon, and joins in with the first head a little above the orbicular bone of the carpus: the third head *k* arises fleshy from the ancon near its extremity, and soon becoming a small long tendon joins in with the first and second heads about the same place where they unite: the fourth head arises fleshy from the flat posterior part of the radius about its middle, and (first becoming tendinous) joins in with the heads about the same place where they join with each other; *l* the common tendon, which is inserted below *m* into the coffin bone. It receives, from the posterior part of the bones of the carpus, the insertion of what is analogous to the flexor brevis pollicis manus, and flexor parvus minimi digiti, in the human body.

N *o* The sublimis, which arises from the internal protuberance of the os humeri posteriorly, over and in common with the first head of the profundus, with which it seems to be confounded, in some degree, all the way down the fleshy part, till it comes near the orbicular bone of the carpus, where it makes a distinct tendon *n*, which divides, near *o*, for the passage of the profundus, and is inserted into the great pastern on each side of that tendon, and serves as a ligament to confine it to that bone when the joint is bent; *N* the fleshy part. It receives, from the posterior and internal part of the radius, the insertion of what is analogous to the flexor longus pollicis manus in the human body.

pp Nervus plantaris. *q* Arteria plantaris. *s* Vena cephalica; it falls into the jugular vein.

tt Vena plantaris externa, and vena plantaris interna. *u* The bursal ligament, at the juncture of the humerus with the scapula. *xx* The external articular ligament of the carpus. *y* *z* The internal articular ligament of the carpus.

12 A ligament running from the orbicular bone of the carpus to the splint bone: it serves as a stay to that bone when the flexor carpi ulnaris is in action: there is a large branch of the vena cephalica protuberant under it.

13 4 4 Interosseus, &c. it is like a strong ligament arising from the bones of the carpus, and upper part of the metacarpal bones: it is inserted into the sesamoid bones and great pastern on each side, and sends off the ligaments 4 4 to the tendon of the extensor digitorum, which it keeps from starting when the fetlock joint gives way. It supplies the places of the interosseus manus, and abductors of

the fore finger, little finger, and short abductors of the thumb, with the adductors of the thumb and little finger.

In the lower Limbs.

a *iliacus internus*; *a* its origin from the spine of the ilium: it arises from the whole or superior half of the inside of the os ilium, and has some origin from that part of the fascia lata which lies betwixt it and the glutei: it is joined in with the *psoas magnus* from its origin, and with it inserted into the little trochanter of the thigh bone: they seem to be but one muscle.

c d d d e f g h *Gluteus medius*; *c* the part which arises from the tendinous surface of the sacro-lumbalis, and does not adhere to the fascia lata; *d d d d* the part which receives fleshy fibres from the fascia lata; *e* its origin from the ilium, which is continued from this place to the posterior part of the spine, and all that space of the os ilium which lies betwixt the spine and the gluteus internus, partly tendinous, but chiefly fleshy; and from the ligament which goes between the ilium and the transverse processes of the os sacrum; *f* the part which lies under the gluteus externus and biceps cruris; *g h* its insertion into the great trochanter.

A A B *Gluteus externus*; *A A* the fleshy part; *B* a flat tendon. *C* *Gluteus medius*. *D* *Pyramidalis*. *E* *Musculus fasciae latae*. *F* *Sartorius*.

k l m n *G H* *Pyramidalis*, arises from the os sacrum and the ligament betwixt that and the ischium: it is, for a considerable way, inseparably joined to the gluteus medius, and inserted at *k* into the back part of the great trochanter: it receives an expansion from the gluteus externus: *G* the insertion of its flat tendon *H*.

s *Triiceps secundus*; it arises from the ischium, and is inserted into the linea aspera of the thigh bone, and near its insertion is attached to the large adductor.

g r a t *Triiceps tertius*, the large adductor of the thigh, or adductor magnus: it arises from the ligament running from the sacrum and coccyx to the ischium; which ligament is probably nothing more than the flat tendon of this muscle, to the posterior edge of which the fascia lata is joined, and to the anterior edge of the ligament running betwixt the os sacrum and the ischium: its principal origin is from the tubercle of the ischium: it is inserted by a strong tendon into the internal condyle of the humerus, behind the origin of the articular ligament and a little below it, and by a flat tendon into the articular ligament and tendon of the semi-tendinosus: it joins in with the long adductor near its insertion.

u w *Gracilis*: it arises from the edge of the inferior branch of the os pubis, near the symphysis, by a broad and very short tendon; from thence the fleshy fibres run down to the internal condyle of the os femoris, where they terminate in a thin tendon, which afterwards degenerates into a kind of aponeurosis, and is inserted into the fore part of the inside of the head of the tibia.

z y z s The inferior part of the semi-tendinosus; the upper part is cut off at *z*: the origin, by carnosus fibres from the broad tendon of the abductor magnus, is shown at *s*: the tendinous portion which wraps over the gemelli is attached to the tendinous ligament which lies over the gemelli and covers some nerves and blood-vessels which pass over the gemelli and run down the leg: they are marked *14* in table the second: it is also inserted by a flat tendon or expansion into the plantaris near the bottom of the fleshy part; through which expansion there is an opening for the passage of a large nerve marked *67* in table the third on the left lower limb; its principal insertion is by a flat tendon into the superior and anterior part of the tibia internally.

123 *Semi-membranosus*; *2* its origin from the tubercle of the ischium: at its origin it is attached to the short head of the biceps cruris; about *s* it joins in with the semi-tendinosus, and is with it inserted into the tibia.

456778 *Vastus externus*; *4* its origin from the posterior part of the great trochanter: *6* the part which arises from the inside: they are both externally tendinous; its origin is continued fleshy along the inside of the femur for about two-thirds of its length downwards; *6* the fleshy belly; *77* its insertion into the patella; *78* its insertion into the lateral ligament of the patella: it is likewise inserted into the tendon of the rectus.

9 *Rectus cruris*: it arises from the external or posterior part of the inferior spine of the ilium by one tendon, and by another from the anterior part of the same spine; these tendons soon unite and form a large fleshy belly, which gemelli to be inserted into the patella.

10 11 12 13 14 15 16 The gemelli; *10* its external head, which arises out of and from the borders of a large fossa or notch in the os femoris, a little above the external condyle, at *10* externally tendinous; *11* its internal head, which arises from a roughness on the lower and posterior part of the os femoris a little above the internal condyle; *12 13* a sort of flat tendon, which may be easily separated from the muscle, only adhering to it by its external edge; its internal edge joins the fascia of the semi-tendinosus, &c. it runs over the surface of the muscle, and joins in with the fascia sent from the semi-tendinosus, &c. which joins it both above and below, and by that means makes a case for the tendons of the gemelli and plantaris; *13* the external fleshy part; *14* the external fleshy part.

51 52 53 Branches of the vena hypogastrica; at *52* a branch which comes from the biceps cruris; at *53* branches are cut off which come from the semi-tendinosus.

54 A branch of the vena poplitea which comes from the biceps.

55 A branch of the vena obturatoria.

56 Vena plantaris externa and vena plantaris interna.

57 57 Glendula poplitea, commonly called the pope's eye.

58 59 59 60 60 A ligament running from the spine of the os sacrum to its transverse processes, and from thence to the tubercle of the ischium, from which the upper head of the biceps receives a fleshy origin; *59 59 60 60* show the place where the fascia lata is cut off which runs betwixt the fascia lata and biceps cruris.

61 62 The external articular ligament which is inserted above into the tibia and below into the astragalus and os calcis.

63 63 A ligament which binds together the bones of the tarsus and metatarsus, inserted externally above into the os calcis, and below into the external splint bone, and internally into the os cuboides.

64 A tarsal ligament.

65 A strong ligament which binds the os calcis to the astragalus, or navicular, ossa cuneiformia, and the internal splint bone.

66 66 67 67 *Interosseus*, &c. it is like a strong ligament, arising from some of the tarsal bones, and the upper part of the metatarsal bones, and is inserted into the sesamoid bones and great pastern on each side: it sends off the parts *67 67* on each side to bind down the tendon of the extensor digitorum pedis.—This is of a ligamentous nature, but supplies the places of the interosseus, the short flexor, adductor and abductor of the great toe, the abductor and short flexor proper to the little toe, and a ligament which arises from the calcaneum and belongs to the cuboid bone; but sends off an expansion which joins the origins of the short flexor and interosseus of the little toe, both those of the interossei of the third of the small toes and that of the adductor of the great toe in the human body. The ligamentous spongyous *67* is sent partly from the interosseus, &c. and partly from the capsular of the fetlock joint to be inserted into the tendon of the extensor digitorum pedis.

THE FOURTEENTH ANATOMICAL TABLE OF THE MUSCLES, FASCIAE, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE, VIEWED POSTERIORLY, EXPLAINED.

In the Head and Wind-pipe.

a a a The orbicular muscle of the mouth.

b b *Musculus caninus*, or the elevators of the corner of the mouth and of the cheek: it arises from the upper jaw bone, and is inserted, at *b b*, into the orbicular muscle of the mouth and buccinator.

c d The buccinator: it arises in three different places: about *d* the superior fibres arise from the alveoli of the upper jaw: the middle fibres arise from the ligamentum inter-maxillare, and the inferior from the lower jaw: it is inserted into the glandular membrane of the inside of the cheek and lips, and at *c* into the orbicularis oris.

e The glandulae buccales, or glandular membrane which lines the inside of the lips. *f g* The elevator of the chin. *h* The globe or ball of the eye. *o o* *Arteria temporalis*. *p p* *Arteria angularis*. *q* *Vena angularis*. *r s* *Vena temporalis*. *t* An artery which goes to the glandulae sublinguales. *u s* *Glandulae sublinguales*. *w s* *Ctenoglossus*; *w* its tendinous origin from the jaw bone; *s* its insertion into the tongue: this insertion is continued from the os hyoides to near the tip of the tongue. *y s* *Hyothyroideus*; *y* its origin from the thyroid cartilage; *s* its insertion into the os hyoides. *1 12* The lower constrictor of the pharynx. *34* *Hyoglossus*; arising at *3* from the os hyoides, and inserted into the tongue near *4*. *5* Part of the os hyoides. *6* The outer ear.

In the Neck.

a b c d e f *Longus colli*; *a* the part coming from its inferior origin from the lateral parts of the bodies of the five uppermost vertebrae of the back, and the lowest of the neck; *b c d e* its originations from the transverse processes of the sixth, fifth, fourth, and third vertebrae of the neck: it is inserted at *f* into the anterior oblique process of the sixth vertebra of the neck: it is also inserted into the bodies of the fifth, fourth, third, and second laterally, near their transverse processes, and into the anterior eminence or tubercle of the body of the atlas.

g g, &c. *h h*, &c. *Inter-transversarii posteriores colli*; *g g*, &c. their originations from the roots of the oblique processes, and betwixt them and the transverse processes where the inter-vertebralis does not cover; *h h*, &c. their insertions into the sixth, fifth, fourth, third and second transverse processes of the vertebrae of the neck.—To divide these into distinct muscles there seems to be, for each insertion into the transverse processes, two originations, viz. one from the inferior part of the vertebra

part lying under the expansion of the semi-tendinosus, &c.; *15* the tendon formed by part of the external head; *16* the tendon of the internal head, formed by the internal head and part of the external head: those tendons, *15* and *16*, are both together inserted into the os calcis.

17 At *17* is marked the cutting off of the fascia from the semi-tendinosus.

18 19 The soleus, it arises from the external articular ligament of the knee, and is inserted into the fascia or tendinous parts of the gemelli *12 13* a little below *19*, or attached to them and inserted with them into the os calcis; the fascia from the biceps, semi-tendinosus, gracilis, &c. with the tendinous part, marked *12 13* in this table, communicate with or are attached to each other, and are inserted partly into the os calcis on the inside of the principal tendon of the gemelli, with which, at their insertion, they are confounded, and are partly inserted on each edge of the tendon of the plantaris as it runs over the os calcis: their lateral parts are joined posteriorly by a ligamentous membrane, marked *23 23 24* in table the twelfth.

20 21 22 The tendon of the plantaris: this muscle arises under the external head of the gemelli (in which it is in a manner wrapped up) out of the large fossa, or notch, in the os femoris: above the internal condyle, on the external side of its fleshy belly, the gemelli is attached to it by fleshy fibres; at *20* it runs over the end of the os calcis, where it is bound on each side by ligaments which prevent its slipping to either side; and to give passage to the tendon of the flexor digitorum pedis, to which tendon it serves as a ligament to confine it to the great pastern when the fetlock joint is bent, and by that means it receives assistance from that tendon in bending the fetlock joint.—This is analogous to the plantaris and short flexor of the toes in the human body, viz. the part above *20* to the plantaris, and the part below *20* to the short flexor of the toes.

23 25 25 25 26 *Flexor digitorum pedis*; *23* the fleshy belly, externally tendinous, which arises tendinous and fleshy from the fibula and articular ligament which runs from the external condyle of the os femoris to and down that bone, and from the posterior part of the tibia, tendinous and fleshy, which origination is continued near half the way down that bone from a considerable roughness, the protuberant parts of which give rise to the four or five tendinous parts of which this muscle is composed; *25 25 25 26* the tendon, inserted at *26* into the coffin bone.

27 27 28 29 *Peroneus*; it arises from the upper part of the fibula and articular ligament, which runs from the external condyle of the os femoris down the fibula: it has an origin from the tendinous surface of the flexor digitorum pedis, near all the length of the fleshy part of that muscle; *28 29* its tendon, which is inserted into the tendon of the long extensor of the toes at *29*, part of which is afterwards inserted into the great pastern on its superior and anterior portions externally.

30 31 *Extensor longus digitorum pedis*; it arises along with the strong tendon of the tibialis anticus, to which it is inseparably joined near its origin: it arises also from the tibia; *30* its fleshy belly; *31* its tendon, at *29* joined by the tendon of the peroneus, with part of which it sends off a slip to be inserted into the great pastern: on its superior and anterior part externally it sends another slip, with the fascia which join it, to be inserted into the superior and anterior part of the great pastern internally, but its principal insertion is into the anterior and superior part of the coffin bone.

32 *Extensor brevis digitorum pedis*.

33 34 *Tibialis posticus*; it arises from the external side of the posterior part of the head of the tibia, and from the tendinous surface of the flexor digitorum pedis; *33* its fleshy belly; *34* its tendon, inserted into the tendon of the flexor digitorum.

35 35 *Popliteus*; it arises tendinous from the external condyle of the os femoris under the articular ligament, and is inserted into the tibia at *35 35* externally tendinous.

36 36 *Nervus sciaticus*.

37 *Nervus sciatico-cruralis*.

38 *Nervus popliteus*.

39 *Nervus plantaris externus* and *nervus plantaris internus*, which are branches of the nervus sciatico-bibialis.

40 A branch sent from the nervus sciaticus, which divides, one branch to go with the blood-vessels to the gluteus, another to the biceps cruris, and another to the semi-tendinosus, &c.

41 *Nervus sciatico-peroneus*.

42 42 *Rami* of the sciatico-peroneus; they run in betwixt the peroneus and long extensor of the toe, and are distributed to those muscles with the tibialis anticus and the neighbouring parts.

43 A branch of the nervus sciatico-cruralis.

44 45 46 Branches of the arteria poplitea communis which is a branch of the internal iliac or hypogastrica: *45* a branch cut off where it enters the biceps cruris; *46* branches cut off, which pass through the fascia lata to go the semi-tendinosus.

47 Arteries which go the biceps cruris.

48 A branch of the arteria poplitea which goes to the biceps cruris.

49 *Arteria tibialis anterior*.

50 *Arteria plantaris externa*.

below the insertion, and the other from the upper part of the next to that.—The lowest origin is from the first vertebra of the back, part of which is inserted into the transverse process of the seventh vertebra of the neck.

i k l *Obliquus capitis inferior*; *i k* its origin from all the length of the spine of the second vertebra of the neck; at *k* where it runs under the rectus capitis posterior longus, it is externally tendinous; it arises from all the posterior part of that vertebra which the inter-vertebralis does not cover, and is inserted, at *l*, into all or most of the broad transverse process of the atlas, which is not covered by the inter-vertebralis.

m *Obliquus capitis superior*; *m* its fleshy origin, which is pretty deep from the broad transverse process of the atlas; *n* its insertion into the occiput.

o p *Rectus capitis posterior major*; *o* its origin from the ridge or spine of the lower oblique process of the second vertebra of the neck; *p* its insertion into the occiput.

q *Rectus capitis posterior minor*, or rather medius; it arises from the root of the spine of the oblique process of the second vertebra of the neck above the origin of the rectus major; and contains its origin for about three minutes up the spine, or ridge of this vertebra: it is inserted by a short and broad tendon into the occiput, wrapping over the surface of the inter-vertebralis.

r s t u v w x The multifidus of the spine, arising at *r s t u* from the descending oblique processes of the vertebrae of the neck, partly, externally, tendinous; *v w* the insertion of the parts arising at *s t u*, from the descending oblique processes of the fifth, fourth, and third vertebrae of the neck, viz. all that part which arises from the third vertebra *w*, the external and middle parts of the origin from the fourth vertebra *t*, and the external part of the origin from the fifth vertebra *s*. The inner part of the origin from the fourth vertebra, and the middle part from the fifth vertebra, with the external part from the sixth vertebra *r*, are inserted into the spine of the third vertebra.—There are fibres inserted into the spine of the third vertebra, arising from three vertebrae below it; and in that manner it runs on down to the bottom of the spine.

y y y The inter-vertebralis appearing betwixt the originations of the inter-transversarii posteriores colli: they arise from the ascending oblique processes of the five inferior vertebrae of the neck, and from the space betwixt the oblique processes of the uppermost vertebrae of the back: they are inserted each into the lateral parts of the bodies of the vertebrae above their origin respectively.

1 Branches of the cervical nerves.

2 Branches of the cervical arteries.

3 Branches of the cervical veins.

4 Part of the vena jugularis communis.

5 Vena jugularis externa anterior.

6 Vena jugularis externa posterior or superior.

7 8 9 10 *Ligamentum colli*; *8* the place where the trapezius and rhomboides are cut from their originations from this ligament; *9* the part which is inserted into the spines of the superior vertebrae; *10* the part which is inserted into the occiput.

In the Trunk.

a *Semi-spinalis dorsi*; it arises fleshy from the tendinous surface of the longissimus dorsi and inserted into the spines of the ten superior vertebrae of the back: it communicates with the spinalis cervicis as well as the fleshy fibres of the spinalis dorsi before its insertion, the spinalis dorsi being inserted below it.

b b c c, &c. The external inter-costals; they arise, at *b b*, from the inferior edge, and a little of the outside of each rib, the last excepted: they are a little tendinous, and descending obliquely downwards, are inserted at *c c* into the upper edge and a little of the outside of each rib, the first excepted.

d d e e, &c. The internal inter-costals; they arise at *d d* from the superior edge of the bony part of each rib, except the first, (not covering any of the outside,) and from the edges of the cartilages of the ribs, and a considerable part of the outside of them; they are chiefly, externally, tendinous, but partly fleshy, and ascending obliquely upwards and forwards are inserted into the lower edge of the bony part of each rib, and into the edges and part of the outsides of their cartilages, the last rib excepted.

f The elevating muscle of the tail. *g* The lateral muscle of the tail. *h* The inter-transversus muscle of the tail. *i* The depressing muscle of the tail.

The muscles of the tail are more fully explained in table the twelfth.

k l m n *Transversalis abdominis*; *k k* the part which arises from the inside of the ribs below the triangularis of the sternum and the diaphragm, by fleshy digitations; the part *l* arises from the three or four uppermost transverse processes of the vertebrae of the loins by an aponeurosis, and fleshy from the internal labium of the crista ossis ili, and a great part of the ligamentum fallopii, or tendinous margin of the internal obliquus of the abdomen; and is inserted into the ensiform cartilage and linea alba, adhering to the posterior plate of the aponeurosis of the internal oblique muscle of the abdomen: at its first passing under the rectus the lower part of the aponeurosis of the transversalis is separated from the upper in a transverse direction from the edge of the rectus to the linea alba, about half way betwixt the navel and synchondrosis of the pubis, the upper part going behind the rectus and the lower before it and the pyramidalis.

o e, &c. Branches of the nervi costales, lying upon the transversalis, which go to the abdominal

muscles and integuments. *p* Branches of the nervi lumbares, which go to the abdominal muscles and integuments lying over the transversalis. *q q*, &c. Arteries from the intercostalis inferior. *r* The external branch of the outer iliac artery in two ramifications, accompanied by *s*. *s* The external branch of the outer iliac vein in two ramifications. *t* The external sphincter ani. *u* Acceleratores penis.

In the upper Limb.

a b o Brachialis internus; *a* the part which arises from the neck of the humerus; *b* the part which arises from the internal lower part of the scapula; at *c* it is going to be inserted into the radius a little below the coraco-radialis and more internally.

d f g h i Profundus, or perforans; it arises by four distinct heads, the first, or most considerable, of which is that marked *d* in this table: it arises from the internal protuberance of the humerus, posteriorly, under, and in common with the sublimis, with which it seems to be confounded, in some degrees, all the way down the fleshy part, till it comes to the tendon where the four heads unite, and then the profundus and sublimis make two distinct tendons: it is tendinous at *d*: the second head arises under the first, from the same protuberance, by a small flatish tendon, which soon swells into a round fleshy belly, then tapering gradually becomes a round tendon, and joins in with the first head a little above the orbicular bone of the carpus: the third head *f* arises fleshy from the ancon near its extremity, and soon becomes a small round tendon; *g* joins in with the first and second heads about *g*, where they unite; the fourth head arises fleshy from the flat posterior part of the radius, about its middle (first becoming tendinous) and then joins in with the other heads about the same place where they join in with each other: they all together form the common tendon *h i*, which is inserted, at *i*, into the coffin bone.—It receives, from the posterior part of the bones of the carpus, the insertion of what is analogous to the flexor brevis pollicis manus, and flexor parvus minimi digiti in the human body.

k l m n The sublimis or perforatus; it arises from the internal protuberance of the os humeri, posteriorly, over, and in common with the first head of the profundus, with which it seems to be confounded, in some degree, all the way down the fleshy part, till it comes near the orbicular bone of the carpus, where it makes a distinct tendon *l m n*, which divides at *m* for the profundus, and is inserted on each side of the great pastern, as at *n* and *n*: it serves as a ligament to confine the tendon of the profundus to that bone when the joint is bent.—This muscle receives from the posterior and internal part of the radius, the insertion of what is analogous to the flexor longus pollicis manus in the human body.

o A ligament which binds down the bending tendons, explained in table the twelfth.

p q Flexor carpi radialis; it arises from the internal protuberance of the os humeri, and is inserted at *q* into the splint bone.

r r Interosseus, &c. it arises from the bones of the carpus and metacarpus, and is inserted, at *r r*, into the ossa sesamoida.

s Nervus radialis.

t Vena cephalica; below the carpus it is called vena plantaris.

u Ligaments which bind the orbicular bone to the radius, the bones of the carpus and metacarpal bone.

w w, &c. Articular ligaments.

z z The cartilages belonging to the coffin bone.

In the lower Limb.

a b c Iliacus internus; *a* part of its origin from the posterior part of the anterior spine, and some marks of its origin from the fascia lata; *b b* its origin from the anterior part of the anterior spine of the ilium, which is continued from all, or most part, of the inside of the ilium, which lies before the transverse processes of the vertebrae of the loins and sacrum; it joins in with the psoas magnus from its origin, and is, with *j*, inserted into the little trochanter of the thigh bone: they seem to be but one muscle.

d e f g g Gluteus internus; *d e* its origin from all that part of the outside of the ilium which is below the origin of the gluteus medius, running between the anterior inferior spine, and the great posterior sinus: it is likewise fixed in the edge of that sinus in the spine of the ischium, and in the orbicular ligament of the joint of the hip: it is inserted at *f f*, into the anterior part of the upper edge of the great trochanter: it is externally tendinous at *d*, and there are tendinous fibres running through it at *g g*.

h i Obturator internus; it arises from the internal labium of all the anterior half of the foramen ovale a little distance from the neighbouring part of the obturator ligament, and also both above and below the foramen: it likewise arises from the upper half of the inside of the os ischium, from the upper oblique notch in the foramen ovale, to the superior part of the great posterior sinus of the os ilium; at *h* it comes out of the pelvis through the posterior notch of the ischium; and at *i* is inserted into the great trochanter.

calcis and ossa cuneiforma, which is analogous to a muscular head in the human body, which consists of two portions distinct from the beginning, both arising from the calcaneum, and inserted into the tendon of the long flexor of the toes before it divides; soon after which the lumbricals arise from the tendons into which it is divided.

32 32 Branches of the arteria glutea, accompanied with veins and nerves. 33 The large sciatic nerve, which, on the thigh, is called sciatico-cranialis. A branch of the arteria cranialis. 35 Arteria poplitea. 36 Arteria obturatoria. 37 Nerves going to the tibialis anticus; they are rami of the small sciatic branch. 38 Nervus sciatico-tibialis internus. 40 40, &c. Articular ligaments. 41 41 The cartilages belonging to the coffin bone.

THE FIFTEENTH ANATOMICAL TABLE OF THE MUSCLES, FASCIAS, LIGAMENTS, NERVES, ARTERIES, VEINS, GLANDS, AND CARTILAGES OF A HORSE, VIEWED POSTERIORLY, EXPLAINED.

In the Head and Neck.

- a* Styloglossus.
- b* Stylopharyngeus.
- c* Stylohyoidæus.
- d* Hyoglossus; arises from the os hyoides, and is inserted into the tongue.
- e* Pterygoideus internus.
- f* Pterygoideus externus.
- g* The middle constrictor of the pharynx.
- h* The superior constrictor of the pharynx.
- i* Crico-arytenoideus.
- k* The posterior or inferior lateral cartilage.
- l* The elevator of the chin.
- l* The outer ear.

m n, &c. Inter-vertebrales; *m*, &c. their origin from the ascending oblique processes of the five inferior vertebrae of the neck: the lowest origin is from the space betwixt the oblique processes of the uppermost vertebra of the back; *n*, &c. their insertions into the lateral parts of the bodies of each vertebra above their origins.

o p q r s t Ligamentum colli; the part *p* arises from the spines of the second and third vertebrae of the back, and the part *o* from most of the spines of the back below them; the part *p* is inserted, at *q q q q*, into the spines of the five superior vertebrae of the neck, and the part *s* is inserted into the occiput at *r*.

In the Trunk.

- a a* Multifidi spinae.
- b* The ligament which runs over the spines of the os sacrum.
- c* The elevating muscles of the tail.
- d* The lateral muscle of the tail.
- e e* The inter-transverse muscles of the tail.
- f* The depressing muscle of the tail.

The muscles of the tail are more fully explained in table the twelfth.

In the upper Limb.

- a a b c d d* Interosseus; arising at *b* from the os magnum or great round headed bone of the carpus, and, at *c c*, from the upper part of the metacarpal bone; it is fleshy at *a a*, and inserted, at *d d*, into the sesamoid bones.
- e* Vena cephalica; below the carpus it is called vena plantaris.
- f* Vena brachialis.
- g* Arteria brachialis.
- h* Nervus medianus.
- i i i* Ligaments which bind the orbicular bone to the radius, the bones of the carpus, and metacarpal bone.
- k k*, &c. Articular ligaments.
- l l l* Ligaments which bind the sesamoid bones to the great pasterns.
- m m* Cartilages belonging to the coffin bone.
- n* A cartilaginous ligament which ties the two sesamoid bones together.

k l Gemini; the upper part of which, *k*, arises from the acute process or spine of the ischium, near the sinus or notch through which the obturator internus bends itself, and is inserted, at *k*, into the great trochanter along with the obturator internus, and the other of the gemini, *l*, which arises from the posterior edge of the sinus, through which the obturator internus bends itself, and from the outer part of the tubercle near the lower part of that sinus, and is inserted along with the tendon of the obturator internus, at *l*, into the great trochanter.

m Obturator externus; it arises from the outer or anterior side of the os pubis, at the edge of that hole next the small ramus of the ischium, and a little to the neighbouring parts of the obturator ligament; and is inserted, at *m*, into the great trochanter.

n Quadratus; it arises from the outer edge, or the obtuse line which runs from under the acetabulum towards the lower part of the tuberosity of the ischium; and is inserted, at *n*, into the oblong eminence of the thigh bone, which stands out partly from the posterior side of the trochanter major, and partly below the same.

o p q r s t Adductor magnus femoris, or triceps femoris; *o* the first part, or triceps primus; *p q q* the second part, or triceps secundus; *r s t* the third part, or triceps tertius; it begins its origin from the outer part of the anterior edge of the os pubis near its syncondrosis, from whence it continues to arise as far as the tubercle of the ischium; from the tubercle of the ischium at *s* and fascia lata at *r*; and is inserted the first part at *o*, and the second at *q q*, into the linea aspera in some measure externally tendinous, and into the internal condyle of the femoris by a strong tendon behind the origin of the articular ligament, and a little below it.

u v x Gracilis; it arises from the edge of the inferior branch of the os pubis near the symphysis by a broad and very short tendon; from thence the fleshy fibres run down to the internal condyle of the os femoris, where they terminate in a short tendon, which afterwards degenerates into a kind of aponeurosis *x*, and is inserted into the fore part of the inside of the head of the tibia.

y The tendon of the musculus parvus, in articulatione femoris situs; it arises by a flat tendon over the posterior tendon of the rectus, from a little above the edge of the acetabulum, and soon becoming a round fleshy belly dwindles again into a small flat tendon, which is inserted into the thigh bone at *y*.

1 1 2 3 4 5 Cruralis, or crureus; 1 1 its origin, from the anterior and outer part of the thigh bone, externally tendinous, being by small flat tendons, which disappear at 22, but inwardly fleshy: it is inserted into the patella at 34, and into the external lateral ligament, at 45, by a flat tendon or fascia; at 3 it is partly divided for the reception of blood-vessels.

6 7 8 10 Vastus internus; 6 the part arising from the upper part of the thigh bone, which origin is continued almost down to the inner condyle, or from about half the length of the muscle, by fleshy fibres, from all that space between the origin of the crureus and the insertion of the adductor magnus femoris: from all this extent the fibres run obliquely downwards and outwards, and are inserted, at 77, into the tendinous surface of the crureus, and at 8 into the patella; 6 7 7 8 shew the impression made on this muscle by the rectus cruris; 10 shew the external surface of the internal side of this muscle on the left side.

11 Interosseus, &c. A Sartorius. B Triceps secundus. C Transversus penis. E One of the gemini. F Obturator internus.

12 13 14 15 16 17 18 19 20 21 Plantaris; 12 its origin out of the large fossa, or notch, of the os femoris; 13 14 its belly; at 13 fleshy fibres are attached to the tendinous surface of this muscle; 15 16 17 18 19 20 21 the tendon, which, about 15, begins to wrap over the tendon of the gemellus; at 16 and 17 it is attached to the os calcis by ligaments, which are inserted into it in those places; and at 18 to the great pastern by a ligament inserted into it there; at 19 it divides for the passage of the tendon of the flexor digitorum pedis; at 20 and 21 it is inserted into the great pastern.—The parts 16 and 17 may be called parts of the origin of the short flexors of the toes; the part above 16 and 17 being analogous to the plantaris, and the part below to the short flexors of the toes in the human body; one being inserted into the calcaneum, and the other arising from it; but, in a horse, one is like a continuation of the other, attached to the calcaneum on each side.

22 23 23 Popliteus; at 22 it arises, tendinous, from the external condyle of the os femoris, under the articular ligament, and near 23 23 it is inserted externally tendinous into the tibia.

24 25 25 Tibialis posticus; 24 its origin from the external side of the posterior part of the head of the tibia: it arises also from the tendinous surface of the flexor digitorum pedis; 25 its fleshy belly; 26 its tendon inserted into the tendon of the flexor digitorum pedis.

27 28 29 30 31 31 Flexor longus digitorum pedis; 27 its origin from the fibula and the ligament which runs from the external condyle of the os femoris, to and down that bone, tendinous and fleshy; and from the posterior part of the tibia, tendinous and fleshy; which origination is continued near half the way down that bone from a considerable roughness, the protuberant parts giving rise to the tendinous parts of which this muscle is composed; 28 the fleshy belly, externally tendinous; 29 30 31 the tendon by which it ends, beginning at 29, coming from under the plantaris, at 30, and inserted into the coffin bone at 31 31.—This muscle is analogous to both the flexor longus digitorum pedis, and flexor longus pollicis pedis in the human body: it receives an addition from the os

In the lower Limb.

A B C Iliacus internus; A part of its origin from the posterior part of the anterior spine, with some marks of its origin from the fascia lata; B B its origin from the anterior part of the anterior spine of the ilium, which is continued from all or most part of the inside of the ilium which lies before the transverse processes of the vertebrae of the loins and sacrum; it joins in with the psoas magnus from its origin, and is with it inserted into the little trochanter of the thigh bone: they seem to be but one muscle.

a a Gemini.

b c Obturator internus.

d e Obturator externus; *d* the fleshy part; *e e* the tendon.

f g Quadratus; *f* its origin; *g* its insertion.

h i Pectineus; A part of its origin; *i* its insertion externally tendinous.

k Part of the sartorius.

K Triceps secundus.

l m n Gracilis; *l* part of its origin; *l m* its fleshy part; *n* its flat tendon.

o p Musculus parvus in articulatione femoris situs; *o* its origin; *p* its insertion.

q r s The origin of the rectus; *q* its internal origin; *r* its external origin; *s* the place where it is cut off.

t The external sphincter ani.

u v The internal sphincter ani, attached, at *u*, to the bodies of the second, third, and fourth bones of the tail.

x y z Levator ani, arising near *x* (where it is tendinous), from the acute process of the ischium; *y* it is inserted, at *y*, into the transverse processes of the second, third, and fourth bones of the tail; and at *z* into the internal sphincter ani.

1 Transversus penis.

2 Acceleratores penis.

3 One of the erectores penis.

4 Arteria sacra.

5 Iliaca minor.

6 Arteria glutea; of which 7 is a branch.

8 Arteria sciatica.

9 Pudica communis.

10 Arteria obturatoria.

11 Arteria cruralis, of which 12 is a branch.

12 Arteria poplitea.

13 Vena poplitea.

14 Arteria tibialis posterior.

15 Arteria peronea posterior.

16 17 The large sciatic nerve, which on the thigh is called sciatico-cranialis.

18 Nervus sciatico-tibialis internus.

19 19 Nervus plantaris externus and nervus plantaris internus.—They are branches of the sciatico-cranialis internus.

20 A ligament which binds the fibula to the tibia.

21 A strong ligament, which binds the os calcis to the splint bone.

22 Ligaments which bind the bones of the tarsus together.

23 24 24 Interosseus, &c. 23 its origin from the tarsal and metatarsal bones; 24 24 its insertions into the sesamoid bones and upper part of the great pastern on each side. It sends off a small ligament on each side to the tendon of the extensor longus digitorum pedis.—This is of a ligamentous nature, but supplies the places of the interosseus, the short flexor, adductor and abductor of the great toe, the abductor and short flexor proper to the little toe, and a ligament which arises from the calcaneum.

25 A cartilaginous ligament, which ties the two sesamoid bones together.

26 27 27 Ligaments which bind the sesamoid bones to the great pastern.

28 28 Cartilages belonging to the coffin bone.

29 29, &c. Articular ligaments.

FINIS.